# AUTHOR INDEX

A

Aaronson, S., 447 Abbo, F. E., 506 Abbott, O. J., 404 Abdel-Ahker, M., 107, 108 Abdelkader, M. M., 250 Abdel-Tawab, G. A., 312 Abe, Y., 636 Abels, J., 439 Abelskov, J., 463 Abelson, P. H., 219 Abood, L. G., 310, 372, 670 Abraham, E. P., 196 Abraham, S., 290, 329, 570, 684 Abramoff, P., 620 Abrams, R., 82, 86, 599 Acher, R., 547-76; 197, 548, 549, 558 Ackerman, C. J., 427 Ackermann, D., 226, 229, 463 Ackermann, W. W., 487, 520 Acs, G., 527, 529, 530 Ada, G. L., 115, 480, 481, 518 Adam, A., 681 Adams, C. W. M., 368 Adams, E., 227 Adams, J., 610 Adams, J. B., 356 Adams, M. E., 691 Adams, M. H., 488 Adamsons, K., 549 Adelberg, E. A., 515, 541 Adelstein, S. J., 213, 670 Adinolfi, A., 315 Adler, A., 83 Adler, F. L., 611 Adler, J., 269, 327, 504, Adler, M., 528 Agna, J. W., 646 Agosin, M., 312 Agranoff, B. W., 76, 86, 98, 139, 140, 323, 430, 431, 432, 681 Agre, C. L., 664 Agren, G., 25, 30 Agress, C. M., 242 Agullo, M. C., see Castanada-Agullo, M. Ahker, M. A., see Abdel-Ahker, M. Ahnström, G., 122 Ahrens, E. H., Jr., 636, 659, 660, 663

Aikawa, J. K., 643

Ainsworth, S., 376 Aisenberg, A. C., 311 Akabori, S., 186 Akamatsu, S., 222 Akers, W. T., 392 Akiya, S., 120 Albers, R. W., 215, 216 Albert, A., 561, 567 Albert, J., 282 Alberts, R. W., 95 Albertson, T., 569 Alberty, R. A., 29, 34, 35, 36, 37 Albrechtsen, O. K., 381 Albright, E. C., 234 Albrink, M. J., 570 Alburn, H. E., 47, 66 Alcock, N., 643, 644, 646 Alderton, G., 196 Aldrich, F. L., 58 Aldrich, M., 635, 637, Aldridge, W. N., 381 Alexander, B. H., 46, 48, 55 Alexander, H. E., 455, 480, 518 Alexander, J. A., 684 Alexander, J. C., 407 Alimova, E. K., 134 Alivisatos, S. G. A., 26 Alkjaersig, N., 48, 54, 55 Allan, J. D., 376 Allard, C., 458 Allen, E. H., 525, 536 Allen, F. W., 455, 461, 463, 467, 510, 528 Allen, P. Z., 610 Allen, R. S., 405 Allfrey, V. G., 510 Allgood, M., 643 Allison, A. C., 492 Allison, J. L., 488, 489, 490 Alonzo, N. F., 143, 144 Alper, T., 517 Al-Rawi, S., 477 Al-Shukri, M., 208 Altman, R. L., 593 Altschul, L., 50 Altszuler, N., 333, 336, 337, 569 Alving, A. S., 671 Amaral, D. F., see Ferreira do Amaral, D. Ambe, K. S., 141, 694 Ambler, R. P., 220 Ames, B. N., 489, 490, 578 Ames, S. R., 393, 396, 402 Amesz, J., 671 Amos, D. B., 577, 580 Amos, H., 493, 494, 495, 508, 510, 528, 598 Anderer, F. A., 482, 483 Andersen, R. N., 553 Andersen, S. O., 357, 358 Anderson, A. R., 645 Anderson, B. M., 427, 670, 671, 675 Anderson, E. P., 577-608: 487, 488, 599 Anderson, F. B., 110, 124, 302 Anderson, G. C., 406 Anderson, G. W., Anderson, J. D., Anderson, L., 430, 431 Anderson, L. A., 678 Anderson, P. R., 232 Anderson, R. N., 198 Anderson, S. G., 480, 518 Anderson, W. W. 692 Andersson, B., 552 Andervont, H. B., 584, 589 Ando, T., 120, 122, 170, 302 Andresen, J. G., 438 Andrews, B. E., 586 Andrews, E. D., 438 Andrews, F. N., 399, 404 Andrews, P., 307 Andrus, S. B., 446 Anfinsen, C. B., 161, 163, 165, 168, 169, 170, 680 Angyal, S. J., 136 Anitia, M., 219 Ankel, H., 670, 671 Anker, H. S., 289, 620, 621 Anno, K., 111 Ansell, G. B., 369, 370 Ansevin, A. T., 482, 483, 520 Anstead, M., 407 Anthony, H., 407 Antolini, C., 320 Anton, A. H., 598 Antoniades, H. N., 566, 569 Antweiler, H., 611 Aonuma, S., 552 Aoyama, T., 216, 219 Apostol, R. R., 380 Apostolakis, M., 565 Appleton, R. J., 271 Applewhite, T. H., 36, 49, 50, 51, 53 Aprison, M. H., 377 Aptekman, P. M., 580

Aqvist, S. E., 169, 352 Arabehety, J., 249 Aravena, L., 312 Arber, W., 489, 493 Arbuckle, A. W., 121 Arcamone, F., 115 Archambault, A., 119 Archibald, A. R., 124 Arcus, A. C., 64 Arends, A., 438 Arens, A., 670 Arens, J. F., 191, 193 Arfin, S. M., 142, 367 Argoudelis, A. D., 115 Arison, B. H., 398, 693 Armand, Y. J., see Jacquot-Armand, Y. Armstrong, D. T., 333, Armstrong, J. J., 209 Armstrong, R. K., 116, 117 Arnon, D. I., 275 Arnstein, H. R. V., 441 Aronow, L., 590, 591, 592, 599 Arrigoni, O., 418 Artman, M., 351 Asano, K. S., see Sato-Asano, K. Aschaffenburg, R., 167 Asensio, C., 75, 312 Ashman, H. G. W., see Williams-Ashman, H. G. Ashmore, J., 304, 332, 333, 335, 682, 683 Ashton, D. M., 87, 594 Ashwell, G., 321, 322, 323, 415, 417, 679, 681 Askonas, B. A., 618, 619, Aso, K., 112, 119, 120 Aspinall, G. O., 119, 124 Asselineau, J., 112, 134, 147 Astrachan, L., 496, 510, 537, 672, 673 Atchison, A., 686 Aterman, K., 396 Atkinson, R. L., 393 Attardi, G., 624 Aub, J. C., 643 Aubert, P., 558 Auda, B. V., 687 Audrain, L., 551 Auerbach, G. D., 199 Auerbach, V. H., 236 Auld, R. M., 245 Auricchio, S., 237 Austin, J. H., 366 Austrian, R., 85 Av, E. G., see Gil-Av, E. Avakian, S., 202 Avizonis, P. V., 226 Awad, E., 52 Awapara, J., 244

Axelrad, A. A., 586, 588

Axelrod, A. E., 49, 52, 66
Axelrod, B., 323, 357, 430, 681
Axelrod, J., 93, 230, 233, 234, 239, 250, 681
Ayengar, P., 95
Ayers, W. A., 90, 300

## B

Bachhawat, B. K., 263, 268, 272, 273 Bachrach, H. S., 487 Bachrach, U., 230 Backus, H. L., 243 Backus, R. C., 489, 490 Bacq, Z. M., 234 Baddiley, J., 84, 209, 348, 349 Baer, E., 147 Baer, H. H., 117, 119 Bagatell, F. K., 309 Bagchi, S. P., 211, 212 Bailey, J. L., 168 Bailey, J. M., 122, 306 Bailey, K., 155 Bailey, R. W., 90, 301, 303 Baillet, J., 558 Bain, J. A., 215, 370, 420 Baines, N. J., 50 Bair, L. R., 658 Baird, E. E., 642, 645 Baird, H., III, 246 Baker, B. R., 202, 600 Baker, H., 440, 447 Baker, L. E., 173 Baker, M. C., 626 Baker, N., 304 Baker, R. K., 597 Baker, S. J., 439 Baker, W. H., 489, 490 Bakerman, H., 427 Bakke, J. L., 560, 561 Balandin, A. A., 38 Balazs, R., 310, 311 Balde, P., 76 Baldridge, R. C., 246, 448 Baldwin, B. C., 353 Baldwin, R. W., 580, 581 Balenovič, K., 195 Baliah, V., 193 Baliga, B. R., 438 Balis, M. E., 536, 563, 590, 591, 592 Ball, D. H., 111, 119, 665 Ball, E. G., 331, 332, 570, 693 Ballance, P. E., 278 Ballou, C. E., 81, 136, 137, 138, 139, 431, 670 Balls, A. K., 24, 26, 31, 52, 58 Balog, J. E., 176 Baltscheffsky, H., 671, 686, Baltus, E., 538 Bamann, E., 193 Bamdas, E. M., 114 Bandow, F., 636, 638 Bandurski, R. S., 84, 325, 348, 349, 350 Bane, H., 643 Banerjee, S., 420, 444 Banes, D., 407 Banfield, W. G., 587 Bangham, A. D., 141, 432 Banik, U. K., 566 Banks, B. E. C., 241 Banks, J., 679, 681 Banks, W., 121, 122 Barban, S., 241, 305 Barbee, K. D., 397, 402 Barber, E., 490 Barber, G. A., 120, 270, 283 Barbezat, S., 134 Barboriak, J. J., 449 Barbu, E., 509 Barclay, R. K., 503 Bargoni, N., 319 Barka, T., 509 Barker, G. R., 106, 595 Barker, H. A., 20, 22, 33, 120, 212, 268, 440, 441 Barker, P., 619 Barker, S. A., 117, 119 Barkulis, S. S., 309 Barlow, G. H., 438 Barlow, J. L., 489, 490, 507 Barnafi, L., 553, 554 Barnard, E. A., 58, 170 Barner, H. D., 495, 584 Barnes, B. A., 645, 646 Barnes, R. H., 403 Barnett, L., 489, 493, 515, 597 Barnett, L. B., 457 Baron, D. N., 250 Barrett, A. M., 549 Barrnett, R. J., 331 Barron, E. G., 638 Barron, E. S. G., 682 Barsky, J., 240 Bartlett, G. R., 310 Bartlett, M. F., 550 Bartley, W., 315 Bartos, M. J., 115 Bartroy, E., 212 Bartsch, K., 669, 670, 671, 678 Bartz, Q. R., 115, 210 Baschang, G., 192 Basford, R. E., 396, 694 Bassett, S. H., 244 Bassham, J. A., 329, 672, 673 Bassler, K. H., 213 Bastenie, P. A., 552 Batchelor, F. R., 200 Bates, H. M., 532, 537,

691

Bates, R. W., 559, 560, 561 Bather, R., 487, 585 Batsel, H., 569 Batt, R. D., 271 Bauditz, W., 97 Bauer, H. F., 132 Baum, H., 121, 122, 357, 358, 360, 361 Baum, P., 670 Baumann, C. A., 404, 447 Bawden, F. C., 478, 519 Baxter, C. F., 95, 216 376, 421, 422 Bayer, E., 658, 659 Bayne, S., 105 Bazemore, A. W., 215 Bean, W. B., 449 Beard, D., 488 Beard, J. W., 488, 584, 585 Beard, M. F., 440 Bearn, A. G., 378, 671 Beath, O. A., 391, 395 Beaton, G. H., 570 Beatty, C. H., 222, 334 Beatty, I. M., 208 Beaudreau, G. S., 585 Beck, C., 598 Beck, M., 117 Beck, W. S., 27, 267 Becker, C., 585 Becker, D. V., 234 Becker, E. L., 629 Becker, R. R., 417 Beekman, B. E., 570 Beerthuis, R. K., 659 Beeson, W. M., 400, 404 Beevers, H., 289, 290 Behrens, O. K., 570 Behrman, E. J., 237 Beinert, H., 20, 31, 32 261, 282 Beiser, S. M., 511, 611 Bell, P. H., 555, 557 Beljanski, M., 75, 531 Belkhode, M. L., 448 Bella, S. T., 354 Bellamy, W. O., 487 Bellens, R., 552 Belman, S., 611, 627 Beloff-Chain, A., 295-346; 304, 310, 316, 317, 319, 329, 331, 333 Belozersky, A. N., 509 Benda, G. T. A., 483 Bender, M. L., 38, 52 Bendet, I. J., 488, 489, Bendich, A., 511, 587 Bendit, E. G., 162 Benditt, E. P., 240 Benedict, J. H., 407 Benedict, S. R., 643 Bennett, L. L., Jr., 582, 589, 590, 591, 592, 593, 595, 598, 601

Bennett, W., 193 Benoit, J., 558 Benoiton, L., 192, 212 Benson, A. A., 135, 329 Benson, E. E., 160, 166 Benson, E. M., 443 Benson, G. K., 564 Bentley, M., 86, 599 Bentley, O. G., 221 Bentley, R., 120 Bentzon, M. W., 506 Benyesh, M., 487 Benzer, S., 489, 493, 504, 515, 597 Benzinger, T., 214 Berde, B., 550, 551, 552 Berenbaum, M. C., 619 Berends, F., 56, 384 Berezov, T. T., 223 Berezovskaia, N. N., 209 Berg, C. P., 237, 446 Berg, P., 17, 18, 19, 525, 526, 527, 528, 529 Bergel, F., 202 Berger, A., 64, 67, 156, 160, 172 Berggård, I., 115 Berglund, F., 644 Bergmann, E. D., 282 Bergmann, F. M., 525, 526, 527, 528 Bergmann, H., 366 Bergmann, M., 152, 173, 188 Bergner, H., 392 Bergol'ts, V. M., 581, 583 Bergquist, P. L., 462, 510, Bergs, V. V., 486 Bergsagel, D. E., 440 Bergson, G., 393, 395 Bergström, S., 639 Bering, E. A., 381 Berizov, T. T., 243 Berlin, H., 438 Berlin, R., 438 Berlinguet, L., 187 Bermann, M., 65 Bernaerts, M. J., 121, 321 Bernal, J. D., 166 Bernhard, K., 279, 280, 282 Bernhard, R. A., 50 Bernhard, S. A., 38, 49, 59, 60 Bernhard, W., 488 Bernhardsen, A., 379 Bernheimer, H. P., 85 Bernlohr, R., 28 Bernsohn, J., 249, 381, 383 Bernstein, I. A., 310 Bernstein, S., 347, 354 Berquist, A., 220 Berridge, N. J., 64 Berry, J. F., 372, 373 Berry, W. K., 372, 385

Bersin, T., 347 Berson, S. A., ... Berström, S., 133 Bertcher, R. W., 439 M. J., 75, 83, 495, 504, 513, 597 Bessman, S. P., 249 Best, C. H., 570 Bestmann, H. J., 118 Bettelheim, F. R., 354 Bettendorf, G., 424 Bettex-Galland, M., 20, 429 Beychok, S., 171 Beyer, R. E., 267, 692, 697 Bezer, A. E., 610, 611 Bhagavan, H. W., 438 Bhattacharya, G., 331 Bhide, B. V., 119 Bibbs, R. H., 687 Bicking, J. B., 21, 448 Bickis, I. J., 312 Bidwell, R. G. S., 114 Biekert, E., 238 Bielka, H., 588, 589 Bielker, A., 487 Biemann, K., 183 Bier, M., 658 Bierfass, M., 406 Bierfosa, M., 439 Bieri, J. G., 391, 392, 393, 394, 396, 397, 398, 692 Bierman, E. L., 570 Biesele, J. J., 595 Biester, J. L., 193 Bigelow, C. C., 163 Bilinski, E., 208 Billen, D., 505 Billingham, R. E., 623 Bines, B. J., 106, 122 Binkley, F., 552 Biorck, G., 248 Bird, H. H., 480, 481, 518, 581 Bird, H. R., 352, 404 Bird, I. F., 296 Birkenhäger, J. C., 311 Birkmayer, W., 385 Birnbau, S. M., 192 Birnbaum, S. M., 212 Birt, L. M., 672, 673 Biserte, G., 202 Bishai, F. R., 670, 671, 678, 688 Bishop, C. T., 665 Bishop, J. S., 304, 333, 569 Bisset, K. A., 618 Bister, W., 116, 117 Biswas, D. K., 420 Bittner, J. J., 586 Bixler, R. L., 48, 50 Bizioli, F., 115 Bizony, P., 230 Björklund, B., 610

Bjorkman, G., 248 Blaber, L. C., 384 Black, A. L., 272, 534 Black, F. I., 487 Black, H., 208 Black, S., 352, 670 Blair, J. W., 404 Blakley, E. R., 324 Blakley, R. L., 94 Blaschko, H., 240 94, 444 Blattner, R. J., 378 Blaxter, K. L., 404, 405, 645 Blech, W., 66 Bledsoe, M. S., 635, 637, 638 Bleifer, K. H., 646 Bleiter, R., 449 Blix, U., 611 Bloch, H., 134 Bloch, K., 27, 29, 78, 79, 145, 237, 261, 281, 284, 426, 681 Block, R. J., 352 Bloemendal, M., 530 Blombäck, B., 353, 354 Blonde, P., 638 Blood, F. R., 445 Bloom, B., 27, 31, 333, 678 Bloomfield, D. K., 145, 281, Bloor, W. R., 371 Blouin, F. A., 113 Blout, E. R., 23, 154, 155, 158, 159, 160 Blumenfeld, O. O., 64, 162, 164, 173 Blumenthal, G. H., 53 Blumenthal, H. T., 53 Bocek, R. M., 222, 334 Bock, H. E., 670 Bock, R. M., 153 Bodansky, O., 670, 671 Bodanszky, M., 197, 200, 549, 550 Bodfish, R. E., 565 Bodo, G., 166 Bodo, R. C. de, 333, 336, 337, 569 Bodonyi, E., 380 Boedtker, H., 177, 477, 478, 518 Boeru, V., 480, 481 Bogdanove, E. M., 561 Boger, W. P., 406, 439 Bogoch, S., 380 Bohren, B. B., 404 Boissonnas, R. A., 197, 198, 200, 550, 551, 555, 556, 557 Boiteux, H., 642 Boku, S., 636 Bolaffi, J. L., 595 Boldrini, R., 392 Boldt, P., 195 Bollet, A. J., 299 Bollum, F. J., 83, 504, 505 Bolton, E. T., 219, 534,

535, 536 Boman, H. G., 529 Bonaduce, L., 426 Bonar, R. A., 488, 585 Bonavita, V., 241, 423 Bond, D. S., 406 Bond, V. P., 245 Bonner, D. M., 538 Bonnichsen, R. K., 670 Bonsignore, A., 320 Boonstra, J. P. C., see Colpa-Boonstra, J. P. Booth, C. C., 439 Boothroyd, B., 132 Borcher, R. R., 202 Borek, F., 508, 611 Borges, F. J., 249 Borglin, N. E., 243 Borkenhagen, L. F., 85, 208 Borman, A., 568, 569 Börnig, H., 334, 670 Borsook, H., 538 Borsos, T., 629 Bortolotti, T. R., 642 Bosch, A. J., 426 Bosch, L., 530, 595 Boshell, B. R., 335 Boshes, B., 381 Bossenmaier, I., 243 Boström, H., 352, 353, 354 Botteri, A., 144 Bottle, R. T., 157 Bouguereau, J., 567 Boulanger, P., 222 Bouman, J., 568 Bourillon, R., 566, 567 Bourne, E. J., 119, 120 Bove, J., 28, 91 Bovet, D., 333 Bowisky, L., 246 Bowman, R. L., 654 Box, H., 512 Boxer, G. E., 671, 677, 678 Boyack, G. A., 595 Boyd, L. J., 440 Boyd, W. C., 629 Boyden, S. V., 618 Boyer, P. D., 15-44; 18, 22, 23, 28, 29, 30, 32, 33, 34, 35, 37, 81, 97, 324, 347, 534, 697 Boyland, E., 353, 354, 359 Bradbeer, C., 261, 289, 290, 326 Bradbury, E. M., 159 Bradbury, J. H., Braddy, L. D., 406 Bradford, P. E., 58 Bradley, R. M., 86, 139, 140, 431, 432 Brady, R. O., 76, 86, 88, 98, 139, 140, 143, 145, 216, 282, 284, 285, 286, 304, 431, 432, 449, 681, 683 Braekkan, O. R., 438 Bragg, W. L., 166

Brand, E., 173 Brand, V. von, 282 Brandt, J. L., 643 Branson, H. R., 154 Brante, G., 369, 438 Brashear, D. S., 406, 439 Bratfisch, G., 360 Braude, R., 403 Braun, D., 189 Braun, P., 243 Braun, W., 611 Braunholtz, J. T., 49 Braun-Menendez, E., 203 Braunstein, A. E., 79 Brawerman, G., 513, 534 Bray, R., 225, 437 Bray, R. C., 32 Brecher, A. S., 58 Bredereck, H., 119 Breese, S. S., 487 Bregant, N., 195 Bregman, E., 332 Bremer, J., 209 Brenner, G., 395 Brenner, S., 487, 489, 493, 507, 515, 597 Brent, L., 623 Bresler, A., 510, 527 Bresler, S. E., 161 Breslow, E., 323 Breslow, R., 21, 448 Bresson, A. L., 586 Brew, W. B., 407 Brice, C., 132 Bricteux-Grégoire, S., 208 Bridgers, W. F., 686 Bridges, M. E., 406 Bridges, R. A., 622 Bridgwater, R. J., 355 Briggs, G. M., 391, 392, 393, 394, 396, 398, 440 Brin, M., 448, 682 Brindley, D. C., 587 Brink, N. G., 47, 562 Brink, R. A., 516 Brinton, C. C., Jr., Britten, R. J., 219, 536 Britton, B., 569 Broadbeer, C., 91 Brobeck, J. R., 565 Brockerhoff, H., 139, 431 Brockman, R. W., 590, 591, 593, 594, 597 Brockmann, H., 195, 196, 228 Broda, E., 312 Brodie, A. F., 396, 692 Brodie, B. B., 250, 681 Brodine, C., 439 Brodksy, I., 586, 587, 589 Brody, E., 406, 439 Bromer, W. W., 570 Bronk, J. R., 695, 696, 697 Brons, D., 25, 56, 383 Brookes, V. J., 67 Brooks, F. P., 553

Broquist, H. P., 220, 445

Brossmer, R., 115 Brown, A. K., 299 Brown, A. V., 497 Brown, C. S., 49 Brown, D. D., 228, 230, 492 Brown, D. H., 81, 88, 93, 298 Brown, D. M., 137, 147, 454, 456, 464, 466, 469 Brown, F., 480, 518, 520 Brown, G. B., 465, 595 Brown, G. L., 497, 503, 528 Brown, G. M., 87, 98, 448 Brown, G. W., Jr., 223 Brown, J. B., 143 Brown, J. D., 684 Brown, L., 159 Brown, P. S., 567 Brown, R. A., 480, 481, 482, 518 Brown, R. F., 39 Brown, R. H., 280 Brown, R. K., 170, 489, 490 Brown, R. R., 238, 250, 424, 681 Brown, S. A., 231 Brown, W. R., 223 Browne, E. A., 670 Brownstein, A. M., 112, 119 Bruckner, V., 611 Brug, J., 115 Bruggen, J. T. van, 262, 282, 289 Bruice, T. C., 26, 38, 52, 58, 62 Brummer, P., 249 Brünig, H., 189 Brunngraber, E. G., 310, 348, 354, 670 Bruns, F. H., 231, 670 Bryan, W. R., 582, 586, 589 Bryce, W. A., 653 Bryce, W. A. J., 123 Bublitz, C., 91, 263, 323, 415, 670, 679, 681 Buc, H., 147 Buchanan, J. G., 209, 348, 349 Buchanan, J. M., 18, 29, 79, 93, 212, 224, 426, 444, 463, 464, 495, 589, 590, 591, 592, 593, 596, 599 Bucher, N. L. R., 681 Bücher, T., 669-708; 669, 670, 671, 675, 676, 677, 678, 680, 684, 685, 686, 687, 688, 689, 694, 695 Buckley, E. S., 642 Budesinsky, Z., 202

Budnick, L. E., 242

Budovich, T., 120

Budovski, E. I., 202 Bueding, E., 123, 670, 671 Buell, M. V., 670, 671 Buffett, R. F., 587, 588, 589 Bulger, H. A., 646 Bullock, D., 246 Bu'Lock, J. D., 276 Bulow-Kästner, J. von, 282 Bumiller, S., 323 Bumpus, F. M., 197, 198 Bunnell, R. H., 397, 402 Bunnett, J. F., 39 Burch, H. B., 405 Burchard, W., 670 Burchenal, J. H., 595 Burford, H., 141 Burge, R. E., 177 Burger, R. E., 404 Burgers, A. C. J., 556 Burgi, E., 507 Burke, D. C., 486 Burma, D. P., 328 Burmester, B. R., 585 Burn, G. P., 447 Burnet, F. M., 475, 486, 520 Burnet, M., 481, 624 Burns, J. J., 413-36; 321, 322, 323, 413, 414, 415, 416, 417, 419, 430, 679, 681 Burns, V. W., 506 Burroughs, W., 404, 406 Burrous, J. W., 584 Burton, K., 674, 675, 680 Burton, L., 586, 588, 589 Burton, R. M., 88, 144, 304, 371, 372, 426, 671 Busch, D., 670, 672, 673 Busch, S., 510 Bush, L. J., 405 Bussard, A., 538, 539, 540 Butenandt, A., 238 Butler, G. C., 454, 467, 468, 469, 512 Butt, W. R., 566 Buttery, S., 615 Buttin, G., 540 Buzzard, J. A., 240 Byerrum, R. U., 238, 327, 425 Byers, S. O., 636, 638, 639 Bynum, B. S., 470 Byrne, W. L., 33, 208 C Cabib, E., 300 Cadotte, J. E., 107 Cady, P., 329, 570 Cahill, G. F., Jr., 335,

682, 683

Cahn, R. S., 195

Cahnmann, H. J., 193, 235

Caldwell, A. L., 565 Callely, A. G., 265, 318 Callen, J. E., 651 Calva, E., 224 Calvin, M., 327, 328, 329 Camien, M. N., 231 Camiener, G. W., 78, 98 Cammarata, P. S., 65 Campbell, A., 542 Campbell, A. Del C., see Del Campillo-Campbell, Campbell, D. H., 614, 615, 618, 620, 626 Campbell, L. L., 442 Campbell, P. N., 531, 536, 619 Canady, W. J., 51 Candy, D. J., 119, 300 Canellakis, E. S., 504, 505, 527 Cann, J. R., 618, 627 Cantero, A., 670 Cantley, M., 110 Cantoni, G. L., 16, 225, 347 Caplan, E., 403 Caputto, R., 65, 174, 398, 416 Card, W. 1., 646 Cardini, C. E., 88, 89, 116, 120, 297, 302 Carey, J. B., 636, 637, 638, 639 Carey, N. H., 591 Carlucci, A. F., 455, 456, 463, 510 Carminatti, H., 77, 88, 297 Carpenter, F. H., 568 Carpenter, M. P., 398, Carpenter, W., 290 Carr, S., 143, 366, 368 39 Carriuolo, J., Carroll, B., 440 Carruthers, C., 512 Carsiotis, M., 16 Carson, J. F., 666 Carson, P. E., 671 Carss, B., 209 Carsten, M. E., 560, 561, 626, 627 Cartan, G. H., 393 Carter, C. E., 590 Carter, C. H., 617 Carter, H. E., 131, 135, 142, 144, 145, 146, 431 Carter, J. R., 170, 457 Carter, L. R., 202 Cartwright, T. E., 483 Carubelli, R., 642 Casal, A., 152 Casentini, S., 558 Cason, J., 664, 666 Cason, V., 660, 664 Cass, R., 248

Castanada-Agullo, M., 50, 51 Castelfranco, P., 17, 84, Casterman, C. H., see Hamers-Casterman, C. Castro-Mendoza, H., 267, 268 Catanzaro, R., 304, 310, 316 317, 319, 329, 331, 333 Cater, D. B., 563 Catlin, B. W., 458 Catravas, G. N., 289 Catron, D. V., 403 Cavalieri, L. F., 466, 469, 504, 506 Cavallini, D., 226 Cavallos, W., 379 Cecil, R., 568 Čehovič, G., 556 Celmer, W. D., 144, 145 Cenciotti, L., 559 Cerletti, A., 552 Cevallos, W., 379 Chabrol, E., 638 Chadwick, C. S., 617 Chaikoff, I. L., 234, 289, 290, 303, 329, 570, 684 Chain, A. B., see Beloff-Chain, A. Chain, E. B., 304, 310, 316, 317, 319, 329, 331, 333 Chakrabortty, H. C., 328 Chakravarti, H. S., 566 Chakravorty, M., 328 Chalmers, J. N., 439 Chalcupka, M. M., 424 Chamorro, A., 552 Champe, S. P., 489, 493 Chan, P. C., 417 Chance, B., 35, 671, 678, 684, 685, 686, 687, 688, 689, 690, 694, 695 Chang, M. L. W., 237, 426, 670, 671 Chang, P. K., 110 Changeux, J. P., 539 Chanock, R. M., 586 Chantrenne, H., 538, 539, 592, 593 Chapeville, F., 352 Chapman, L. F., 381 Charalambous, G., 113 Charalampous, F. C., 323, 430, 432, 681 Charanduk, R., 132 Chargaff, E., 136, 143, 144, 369, 455, 468, 513, 539 Charlet, M., 638 Charonnat, R., 638 Chatterjee, G. C., 323, 415 Chatterjee, I. B., 323, 415 Chauchard, P., 217 Chaudhuri, N. K., 595

Chauvet, J., 197, 549, 558 Chavre, V. J., 26, 60, 61, 62 Chaykin, S., 78, 237, 426 Check, W. R., 558 Chefurka, W., 670, 671 Cheldelin, V. H., 319 Chen, P. S., 199 Chen, S. L., 298 Chen, Y. T., 416 Cheng, C. C., 465 Cheng, E., 404 Cheng, H. F., 620, 628 Cheng, P., 480, 518 Cheng-Wu, C., 210 Cheo, P. C., 477, 518 Cheong, L., 595, 597, 598 Cherniak, M., 378 Chervenka, C. H., 54, 58, 164 Chesbro, W. R., 193 Chesley, L. C., 643 Cheung, M. W., 244 Chiang, C., 308 Chichester, C. O., 221 Chiga, M., 697 Chihara, H., 193 Childs, B., 670, 681 Chillemi, D., 568 Chmielowski, J., 666 Chopard-dit-Jean, L. H., 398, 693 Chorazy, K., 222 Chorazy, M., 222 Chow, B. F., 439, 441 Christensen, F., 396 Christensen, G. M., 552 Christensen, H. N., 244 Christian, W., 682 Christman, D. R., 226 Christophe, J., 338 Chu, P., 116 Chung, D., 198, 557 Church, B., 324 Ciaccio, E. I., 671, 677 Ciferri, O., 324 Cifonelli, J. A., 39, 114, 117, 299 Cifonelli, M., 39 Ciotti, C. J., 427, 671 Ciotti, M. M., 670, 671, 672, 686 Citterio, C., 392 Civen, M., 236, 239 Claassen, M., 381 Clahn, P. E., 234 Clancy, M. J., 110, 112 Claringbold, P. J., 567 Clark, C. T., 240, 250 Clark, E. W., 627 Clark, J. M., 526 Clark, R. E., 193, 304 Clark, V. M., 396, 692 Clarke, D. A., 595 Clarke, D. W., 335 Clarke, R. T. J., 303 Clark-Lewis, J. W., 201 Classen, L. J., 404 Clauser, H., 551, 567 Clayton, R. A., 319 Cleaver, A. J., Cloeren, S., 686 Close, H. G., 249 Closon, J., 235, 353 Clouet, D. H., 236, 375 Cochran, D. G., 670, 671, 696 Cockburn, R. M., 282, 289 Coe, E. H., Jr., 516 Coe, E. L., 312 Cohen, C., 155, 156, 178 Cohen, E., 46, 47 Cohen, G. N., 525-46; 526, 532, 533, 534, 535, 540, 541, 542 Cohen, J. A., 25, 55, 56, 384 Cohen, L. A., 153, 568 Cohen, P. P., 16, 80, 223, 224 Cohen, S., 613 Cohen, S. G., 50 Cohen, S. S., 489, 490, 494, 495, 513, 584, 595 Cohen, W., 59, 63 Cohn, D. V., 141, 368 Cohn, M., 29, 33, 539, 540, 620, 624, 697 Cohn, P., 532 Cohn, W. E., 461, 469, 510, 528 Cole, R. D., 46, 168, 174, 199, 525, 557, 563 Colin, H., 135 Colli, W., 698 Collier, C. S., 243 Collins, F. D., 147, 368 Cölin, R., 196 Colobert, L., 67 Colowick, S. P., 16, 680, 684 Colpa-Boonstra, J. P., 690, 691 Colter, J. S., 476, 480, 481, 482, 518, 581 Colvin, J. R., 125 Comb, D. G., 115, 116 Combes, B., 335 Combs, G. F., 401, 403 Commerford, S. L., 587 Commoner, B., 32, 477 Conard, V., 552 Conches, L., 325 Conchie, J., 338 Condliffe, P. G., 559, 560, 561 Conn, E. E., 230 Conn, J. W., 645 Connell, G. E., 512 Connelly, J. L., 690 Conney, A. H., 413-36; 413, 414, 416 Connolly, J. M., 613

617, 618 Conrat, H. F., see Fraenkel-Conrat, H. Constable, B. J., 559 Contopoulou, R., 264 Conway, E. J., 215 Cook, R. P., 660 Cooke, J. P., 169 Cooke, W. T., 441 Coombs, R. A. A., 618 Coon, M. J., 210, 263, 268, 269, 272, 273 Coons, A. H., 609, 613, 617, 618 Cooper, B. A., 437 Cooper, C., 696, 697 Cooper, F. J., 663 Cooper, F. P., 665 Cooper, J. A. D., 282, 289 Cooper, J. R., 598, 670 Cooper. O., 332, 570, 693 Cooperman, J. M , 445 Cooperstein, S. J., 690 Coote, J., 525 Coots, R. H., 430, 431 Cope, A. C., 116 Cope, F. W., 243 Cope. O., 645, 646 Coquellet, O., 638 Cordes, E., 528 Cordoba, F., 610 Corey, E. J., 184, 185 Corey, R. B., 154 Cori, A. T., see Traverso-Cori. A. Cori, C. F., 89, 330, 331, Cori. O., 78, 79, 222, 262 Coriandoli, E. M., see Mascitelli-Corinadoli, E. Corlette, S. L., 512 Cormier, M. J., 81 Cornatzer, W. E., 243 Cornfield, J., 561 Cornforth, J. W., 27, 665 Cornforth, R. H., 27, 681 Corte, G., 444 Corwin, L. M., 282, 325, 391, 396, 397 Cossano, B. J., 84 Cottet, J., 638 Couch, J. R., 393, 407 Coughlin, C. A., 515 Coulomb, B., 339 Coulson, R. A., 113 Coultas, M. K., 591 Countryman, J. L.. 496, 510 Courcon, J., 622 Couri, D., 319 Coursaget, J., 619 Courtois, J. E., 106, 119, Coutelle, R., 581 Coval, M., 563 Cowan, J. C., 202

Cowan, P. M., 177 Cowen, P. N., 583 Cowgill, F. R., 449 Cowie, D. B., 219, 526, 532, 533, 534, 535 Cowie, J. M. G., 121, 122 Cox, E. V., 441 Cox, H. R., 585 Cox, J. S. G., 665 Cox, R. -A., 467 Coxon, B., 116 Craddock, V. M., 532 Craig, J. M., 245 Craig. L. C., 175, 196, 636 Craig, N. C., 37 Craigie, J. S., 114 Cramer, F., 39, 117 Crammer, J. L., 162, 164 Crampton, C. F., 612, 613, 614, 623 Crampton, E. W., 404, 405 Crane, F. L., 396, 398. 399, 688, 689, 691, 693, 694 Crane, R. K., 75, 114, 313 Cravioto, J., 244 Crawford, I. P., 516, 538 Crawford, L. V., 493, 494, 496, 508, 514 Crawford, M. A., 250 Crawford, R. B., 397, 691 Crawhall, J. C., 616 Creaser, E. H., 312 Creasey, N. H., 384 Creese, R., 570 Creger, C. R., 393 Crestfield, A. M., 461, 463, 510 Creveling, C. R., 233, 234, Crick, F. H. C., 166, 177, 462, 503, 515, 535, 538 Crittenden, E. R. S., 25, 89 Crombie, W., M., 278 Cron, M. J., 115 Cronkite, E. P., 245 Crook, J. W., 385 Crout, J. R., 248 Crumpler, H. R., 244 Crumpton, M. J., 115, 117 Csallany, A. S., 397 Culbertson, C. C., 404 Culik, R., 419 Cumings, J. N., 367, 378 Cummings, A. H., 404 Cummings, D. J., 489, 493 Cummins, J., 217 Cummins, J. T., 563, 564 Cunha, T. J., 400 Cunningham, F. J., 567 Cunningham, L., 458, 459 Cunningham, L. W., 49, 58 Cunningham, N. F., 399 Curran, G. L., 380

Curran, W. V., 200 Curry, D. M., 570 Curtis, D. R., 215 Curtis, E. J. C., 118 Curzon, G., 367, 377, 378 Cushing, J. E., 618 Cusworth, D. C., 376 Cynkin, M. A., 327 Czerkawski, J. W., 47 Czok, R., 670, 671

I

D'Abramo, F., 348, 356 Dacons, J. C., 120 DaCosta, F. M., 228 Daesch, G. E., 670 Dafeldecker, W., 116 Dagley, S., 265, 318 Dahl, J. L., 591, 593, 594, 595 Dajani, R. M , 207 Dalgleish, C. E., 250, 619 Dallam, R. D., 394, 395, 396, 692 Dalton, A. J., 487, 585 Daly, J., 234 Dalziel, K., 670 Dam, H., 393, 396, 397 Damaskus, C. W., 58 Dameshek, W., 591, 592, 623 Damm, H. C., 199 Damme, O. V., 518 Dancis, J., 245, 246, 376 Dandliker, W. B., 698 Dane, E., 190 D'Angelo, S A., 561 Daniel, L. J., 383, 438, 440 Daniels, D. G H., 135 Danishefsky, I., 353 Danneberg, P. B., 595, 597 Danon, D., 629 Danzai, M., 119 Darby, W. J., 445 Darmstadt, R. A., 505 Darnell, J. E., 487 Darrow, D. C., 644 Dasgupta, P. R., 559 Da Silva, L. C., 637, 639 da Silva Carvalho, J., see Silva Carvalho, J. da Datta, A., 93 Datta, D. K., 275 Datta, S. P., 193 Dausset, J., 618 Davenport, G. R., 582, 583 Davey, C. L., 79 Davide, H., 133 Davidson, C. S., 448, 682 Davidson, E. A., 76 Davidson, I. W. F., 570 Davidson, J. D., 247, 590 592, 593 Davidson, J. N., 504, 505 Davidson, N., 466

Davidsson, D., 642, 643, 644, 645 Davie, E. W., 525 Davies, A., 249 Davies, D. A. L., 114, 115, Davies, D. R., 56, 384, 385 Davies, D. S., 557 Davies, J. H., 139 Davies, J. W., 568 Davies, M., 482 Davies, M. D., 480, 482 Davies, R. E., 215 Davies, R. K., 374 Davies, S. B., 557 Davis, B. D., 320, 538 Davis, B. R., 396 Davis, F. F., 455, 456. 461, 463, 510, 528 Davis, J. M., 597 Davis, R. P., 36 Davis, S., 642 Davison, A. N., 240, 249, 368, 369, 370, 378 Davison, P. F., 490 Davisson, J. W., 220 Dawbarn, M. C., 441, 443 Dawe, C., 589 Dawe, C. J., 586, 587 Dawid, I. B., 76 Dawson, R. M. C., 141, 432 Day, E. D., 580 Day, R. A., 599 Dayton, P. G., 321, 323, 417, 419 Deal, C. H., 653 Dear, W. E., 558 de Bodo, R. C., see Bodo, R. C. de Debuch, H., 261, 366, 371 De Carvalho, S., 589 De Castro, F. T., 681 Decker, J. L., 247 Decker, K., 90 Decker, R. H., 424 De Deken-Grenson, M., 511 de Duve, C., see Duve, C. Defalco, A., 375, 376 de Favelukes, S. L. S., see Favelukes, S. L. S. de Defaye, J., 112 Defendi, V., 581, 585 Defloor, J., 324 De Giovanni, R., 597 de Goey, J., see Goey, J. de Dehority, B. A., 221, 402 Dehove, J. H., see Holleman-Dehove, J. Deicher, H. R. G., 611 Deichmiller, M., 619, 620, Deierkauf, F. A., 56, 384 Deinhardt, F., 486, 520, 587

Deiss, H., 636, 638 DeJong, R. N., 379 Deken-Grenson, M., see De Deken-Grenson, M. Dekker, C. A., 453-74; 112, 458, 459, 460, 466. 471, 476 Dekker, E. E., 263, 273 de la Fuente, G., see Fuente, G. de la De la Haba, G., 65, 225 de Lamirande, G., see Lamirande, G. de Delaney, R., 170 Delany, K., 403 De LaPena, C., 244 Delbrück, A., 97, 143, 348, 356, 357, 509, 669, 670, 671, 677, 678 Del Campillo-Campbell, A., 262, 263, 273 Del Castillo, L. M., 50, 51 De Leon, R. P., 312 de Ley, J., see Ley, J. de Del Frade, I. S., 203 De Luca, H. F., 314 Del Vecchio, A., 563 Delvin, T. M., 696, 697 De Marco, C., 226 Démare, J. L., see Legault-Démare, J. DeMeio, R. H., 347, 348, 353, 355 Demeulenaere, L., 670, 671 De Moss, J. A., 525, 526 Den, H., 269 Denes, G., 492 Dennell, R., 234 Denstedt, O. F., 36, 282 Dent, C. E., 244, 376 Dent, D. E., 250 Denton, C. A., 238, 352, 405 Denz, L., 670 Derber, V. J., 243 de Renzo, E. C., see Renzo, E. C. de de Robichon-Szulmajster, H., see Robichon-Szulmajster, H. de Derrien, E., 635 Deshusses, J., 140 Desnuelle, P., 54, 55, 56, 162 DeTar, D. F., 448 Dettelbach, H. R., 552 Deuel, H., 299 Deutsch, J. F., 506 Deutsch, S., 556 de Ven, A. M. Van, see Van de Ven, A. M. deVernejoule, P., see Vernejoule, P. de Devlin, T. M., 686, 689 Devreux, S., 592, 593

de Vries, A., see Vries, A. de De Waard, A., 79, 283, Dewar, R. A., 654 Dewey, D. L., 311, 312 DeWitt, W. B., 392 Dexter, R. N., 193 Dialameh, G. H., 392, 395, 398 Diamantstein, T., 76 Diara, A., 134 Dickens, F., 317, 318, 675, 680, 681 Dicker, S. E , 551 Dickman, S. R., 16, 336. 458 Dieckmann, M., 528, 527, 528 Diekmann, H., 670 Diener, T. O., 479, 518 Dienes, L., 617 Dierks, C., 457 Dietrich, L. S., 427, 670 Dietsche, W., 39 DiFerrante, N., 354 Dijkstra, G., 655, 659 Dilapi, M M., 620 Dils, R. R., 208 Di Marzio, E. A., 154 DiMayorca, G. A., 587 Dimick, M. K., 236 Diminiczak, J., 556 Dimler, R. J., 112, 144 Dimroth, K., 467, 468 Dineen, J. K., 581 DiNella, R. R., 379 Dingman, W., 374, 375, Dingwall, A., 464 Dinning, J. S., 437-52; 392, 394, 441, 442, 505 Dintzis, H. M., 166 Dinusson, W. E., 404 Diringer, R., 151-82 Dirksen, M. L., 458, 459, 460, 471 Dische, Z., 320 Distler, J. J., 107 dit-Jean, L. H. C., see Chopard-dit-Jean, L. H. Dituri, F., 282 Dixon, F. J., 613, 619, 620. 621, 622, 623 Dixon, G. H., 25, 45, 46, 52, 54, 55, 56, 91, 172 Dixon, H. B. F., 554 Dixon, H. H., 222 Dixon, J. S., 557 Dixon, M., 16, 33, 35, 37, 49, 91 Dizet, L. L., see Le-Dizet, L. Dmochowski, L., 584, 586, 587, 589 Dobbing, J., 369, 370 Dobson, D. C., 393

Doctor, V. M., 440, 443 Dodgson, K. S., 357, 358, 359, 360, 361 Doe, R. P., 645 Doeg, K. A., 687, 688, 690, 694 Doell, R. G., 213 Doepfner, W., 550 Dogmak, G., 286 Doherty, D. G., 54 Doi, R., 324 Dole, V. P., 570, 660 Domagk, G., 309 Donaldson, K. O., 397, 692 Donaldson, R. M., Jr., 249 Doniach, D., 619 Donovan, G. A., 404 Donovan, J. A., 679 Donovan, J. W., 163 Dorcherholmen, A., 439 Dore, J. B., 407 Dörfel, H., 114 Dorfman, A., 114, 117, 298, 299 Dorfman, R., 681 Dorfman, R. I., 567 Dose, K., 670 Doty, P., 154, 157, 158, 159, 177, 459, 470, 478, 509 Doty, P. C., 158 Doudney, C. O., 514, 517 Doudoroff, M., 20, 33, 120, 264, 322 Dounce, A. L., 467 Dove, W. F., 466 Dowben, R. M., 322 Downie, A. R., 159 Downing, M., 212 Doy, C. H., 235 Doyle, F. P., 200 Dragendorff, 635 Drake, C., 393 Drake, J. W., 520 Drakulic, M., 517 Draper, H. H., 393, 396, 397, 402, 406 Draut, J., 166 Drechsler, E. R., 22 Drell, W., 233 Dresner, E., 247 Dreyer, W. J., 489, 492 Driscoll, T., 440 Drori, D., 406 Drury, D. R., 331, 336 Drye, K J., 404 Drysdale, G. R., 697 D'Silva, J. L., 570 Dubert, J. M., 620, 623 Dubin, D. T., 489, 490 Dubnoff, J. W., 212, 236 Dubos, R. J., 401 Duckworth, J., 645 Dudley, C., 275, 316 Duff, R. B., 113, 265, 266, 307, 319 Duggan, A. W., 552

Duggan, D. E., 594 Duggan, E. L., 471 Dukes, P. P., 493 Dulaney, A. D., 583 Dulbecco, R., 586 Dull, M. F., 111 Dunahoo, W. S., 407 Dunn, A., 333, 336, 337, 569 Dunn, D., 595 Dunn, D. B., 460, 461, 462, 463, 469, 490, 510, 528, 529 Dunn, M. S., 231 Dunn, T. B., 586, 589 Durall, G. L., 618 Durand, H. W., 111 Durr, I. F., 221, 274 Duthie, E. S., 54 Dutton, A. H., 592, 593, 598 Dutton, C. G. S., 107 Dutton, G. J., 300, 301 Dutton, H. J., 143, 144, 658 Dutton, R. W., 592, 593, 598 Duve, C. de, 570 du Vigneaud, V., see Vigneaud, V. du Duysens, L. N. M., 670, 671 Dvonch, W., 47 Dziewiatkowski, D. D., 347, 352, 353, 354

E

Eagle, E., 305

Eagon, R. C., 324 Earl, J. M., 209, 270, 271 Easty, G. C., 628 Ebata, M., 49 Ebert, M., 598 Ebin, L., 440 Ebisuzaki, K., 75, 494, 495, 513 Eble, T. E., 595 Eckstein, B., 338 Eddy, B. E., 586, 587 Edelhoch, H., 26, 158, 173 Edelson, J., 202, 221 Edery, H., 385 Edgar, G. W. F., 369 Edgar, R. S., 504 Edgar, S. A., 406 Edman, P., 152, 153, 183, 184, 188, 196 Edmonds, M., 82 Edsall, J. T., 26, 158. 164 Edwards, C. H., 202 Edwards, G. A., 202 Edwards, H. M., 400, 406, 407

Edwards, H. M., Jr., 407 Edwards, J. L., 614 Edwards, T. E., 112, 113, 125 Egami, F., 353, 355, 356, 360, 361, 454, 455, 456 Egdahl, R. H., 243 Eggerer, H., 98 Eggert, R. G., 392 Eggleston, L. V., 223 Eglinton, G., 665 Ehrenberg, A., 670 Ehrenpreis, S., 53 Ehrlich, H. L., 305 Eiber, H. B., 353 Eichel, H. G., 313 Eichel, H. J., 672 Eichenberger, E., 146 Eidelberg, E., 215, 216, 421 Eidinoff, M. L., 595, 597, 598 Eiduson, S., 240 Eigner, E. A., 529, 557 Eik-Nes, K., 336 Eimhjellen, K., 276 Eiseman, B., 570 Eisen, H. N., 611, 626, 627 Eisenberg, F., Jr., 321, 323, 417 Eisenberg, M. A., 51, 52 Eisengart, A., 396 Eisengart, R. S., 243 Eisner, A., 592 Eldridge, A. C., 202 Elion, G. B., 466 Ellefsen, Q., 125 Ellenbogen, E., 194 Ellenbogen, L., 406, 439 Ellfolk N., 84 Ellington, E. V., 196 Elliot, W. B., 696 Elliot, W. H., 210 Elliott, A., 158, 159, 161, 171 Elliott, D. F., 152, 153 Elliott, K. A. C., 95, 125, 376 Elliott, W. B., 78, 91 Ellis, S., 560, 561, 564, 565 Elmore, D. T., 50 Elmqvist, A., 548 Elodi, P., 23 Elvehjem, C. A., 400 Elzina, N. V., 309 Emerson, R. J., 282 Emr. A., 202 Emson, H. E., 513 Endicott, F. C., 611 Eng. L. F., 477 Engel, F. L., 569 Engel, L. L., 684 Engelhardt, V. A., 309 Engelhardt-Geolkel, A.. 670

Englard, D., 91 Englard, S., 16, 28, 315 Engle, S. L., 549 Engler, R., 484, 519 Engström, L., 30 Ennor, A. H., 77, 194, 208, Entenman, C., 225, 306 Ephrussi-Taylor, H., 503, 515, 516 Eppert, G., 189 Epstein, H. T., 488, 489 Epstein, M. A., 487, 585 Epstein, S. I., 626, 627 Eränkö, O., 382 Erbland, J., 141, 143, 366 Eriksson, S., 636 Erlander, S. A., 121, 123 Erlanger, B. F., 48, 200, 611 Ermolaev, K. M., 114 Ernster, B. B., 670, 684 Ernster, L., 670, 684, 687, 697 Ernstrom, C. A., 65 Errera, M., 517 Erwin, E. S., 404 Erwin, M. J., 25, 590 Esser, H. O., 398 Esser, R. J. E., 115 Estabrook, R., 670, 677, 678, 687, 688, 695 Estes, J. D., 586 Estren, S., 406 Ettlinger, M. G., 361 Euler, H. von, 674 Evans, C., 323, 414, 430 Evans, E., 681 Evans, E. A., Jr., 488 Evans, J. S., 595 Evans, R. L., 217, 376, 568 Eveland, W. C., 617 Evenson, A., 400 Eviatar, E., 557 Extren, S., 439 Fagan, V. M., 330, 333, 334, 683

Faber, J. G., 439 Fabiani, E., 347 Faessler, A., 670 Fagraeus, A., 618 Faillard, H., 115 Fairbarn, D., 119 Fakagi, S., 193 Falcone, A. B., 29, 33, 97 Fanshier, D. W., 95, 96 Faragalla, F. F., 421 Farber, M. B., 621 Faria, A. L. de, see Limade-Faria, A. Farmer, V. C., 265, 266, 307 Farr. A. L., 379

Farr, R. S., 628 Farrar, T. C., 29 Fasman, G., 153 Fasman, G. D., 159 Fassina, G., 458 Faulkner, J., 440 Faulkner, W. R., 445 Favelukes, S. L. S. de, 325 Fechner, W., 694 Feeney, R. E., 438 Feinberg, R. H., 228, 416 Feingold, D. S., 76, 84, 85, 89, 113, 299, 300, 302 Feist, E., 269 Feldman, M., 579 Feldman, S., 215 Feller, D. D., 269 Fellig, J., 143 Felsenfeld, G., 470 Felton, L. D., 622 Felts, J. M., 213, 266 Fenner, F. W., 624 Fenton, E. L., 568, 569 Ferber, E., 202 Ferguson, J. J., Jr., 91, 221, 263, 264, 274 Ferguson, L. T., 66 Ferrari, G., 215, 421 Ferrari, R. A., 75, 114, 135 Ferreira do Amaral, D.. 698 Ferrier, R. J., 119 Ferris, J. P., 199 Festenstein, G. N., 302 Feughelman, M., 162 Feurer, M., 189 Fiala, G., 403 Fichman, M., 67 Ficket, H., 511 Ficq, A., 613 Field, A. C., 643 Figueiredo, E. A., 494 Fildes, P., 492 Filitti-Wurmser, S., 629 Finch, J. T., 487, 520 Fincham, J. R. S., 578 Findlay, J., 338 Finean, J. B., 368 Fingerman, L., 371 Fink, H., 394, 395, 398 Fink, K., 230, 244 Fink, R. M., 230, 244 Finkle, B. J., 59, 275, 323, 416, 417 Finter, N. B., 484, 486 Firestone, D., 407 Fischel, E. E., 611 Fischer, E. H., 21, 25, 30, 89 Fischer, F. G., 114 Fischer, H., 202 Fischer, H. G., 114 Fischer, H. O. L., 1-14; 117, 139 Fischer, M., 116, 117

Fisher, H. F., 34 Fisher, J., 621, 670 Fishman, W. H., 320 Fitch, F. W., 619 Fitch, W. M., 303 Fitts, D. D., 154 Fitzgerald, J.R., 570 Fitzgerald, P. L., 455 Fitz-James, P. C., 506 Flaks, J. G., 494, 495, 513, 584, 590, 595 Flanagan, C. L., 671 Flavin, M., 25, 210, 267, 268 Fleckenstein, A., 29 Fleischer, S., 612, 616, 693 Fleming, I. D., 121, 122, 124 Fles, M., 568 Fletcher, A. P., 48, 54, 55 Fleury, P., 106 Flexner, J. B., 376 Flexner, L. B., 376 Flexser, L. A., 466 Fliedner, T. M., 245 Fling, M., 538 Flink, E. B., 645 Flodin, P., 186 Florey, E., 215 Florkin, M., 208 Florsheim, W. H., 561, 565 Flowers, H. M., 142 Fluharty, A. L., 670 Flynn, R. M., 273 Foa, P. P., 569 Fog. T., 379, 380, 381 Fogel, M., 586 Folch, J., 131, 141, 143, 144, 365, 367, 368, 374, 376 Foley, E. J., 580 Folkers, K., 114, 398, 399. 693 Folley, S. J., 564 Follis, R. H., Jr., 247 Foltmann, B., 65 Foltz, C. M., 391, 393, 395 Fondy, T. D., 29 Fong, C. T. O., 198 Fontaine, J. A., 561 Fontes, A. K., 585 Forbath, N., 335 Forbes, M., 394, 403 Forbes, R. M., 405 Ford, C. E., 577 Fordig, O. B., 115 Foreman, D. R., 298 Formica, J. F., 98 Formica, J. V., 286, 449, 681 Fornaini, G., 320 Forrest, H. S., 220 Forster, F. M., 243, 379 Forster, R. P., 644

Forsyth, G., 296 Forsythe, W. G. C., 264 Fortier, C., 558 Foster, A. B., 107, 112, 117 Foster, J. F., 165 Foster, J. W., 266 Fothergill, J. E., 616 Fouquey, C., 113, 135, 146 Fowden, L., 220 Fowler, D. I., 244 Fox, A. S., 199 Fox, J. J., 454, 595 Fox, M. R. S., see Spivey-Fox, M. R. Fraenkel-Conrat. H., 470, 477, 478, 483, 484, 517, 518 Frame, E. G., 244 Francis, G. E., 612, 613, 621 Francki, R. I. B., 519 Francois, R., 378, 379 Frank, M., 304, 310, 317 Frank, O., 440, 447 Franke, W., 265, 670 Frankel, F. R., 623 Frankland, M., 244 Franklin, R. E., 467, 478 Franklin, R. M., 480, 481, 485, 518 Franz, J. M., 236 Franzl, R. E., 366 Fraps, R. M., 559, 560, 561 Fraser, D., 476, 490, 491 Fraser, J., 529 Fraser, K. B., 520 , 441 Fraser, M. J. Fraser, R., 39, 644, 645, 646 Fraser, R. D. B., 162 Frederick, K. J., 438 Fredericks, J., 569 Free, C. A., 560 Freedman, A. D., 681, 682, 683 Freedman, L., 335 Freedman, P., 643 Freeman, G., 586 Freeman, I., 243 Freeman, M., 598 Freeman, N. K., 485 Freese, E., 508, 515, 597 Frei, J., 670 Freiman, A., 243 Freinkel, N., 335 French, D., 121, 122, 123 French, E. L., 115 French, J. C., 115 French, J. D., 216, 421 Frendo, J., 226 Fresco, J. R., 466 Fresco, R., 478 Freter, K., 197 Freund, J., 611

Frey, H. M., 561 Fricke, H. H., 416 Fridovich, I., 27 Fried, M., 52, 469 Friedberg, F., 227 Friedberg, W., 612, 614 Frieden, C., 23, 35, 36 37, 213, 670 Frieden, E., 51, 570 Friedhoff, A. J., 233 Friedkin, M., 681 Friedland, I. M., 427, 670 Friedman, B. I., 439 Friedman, F., 586, 588, 589 Friedman, H., 429 Friedman, L., 407 Friedman, M., 594, 636, 638 639 Friedman, P. J., 240 Friedmann, B., 332 Friend, C., 587, 589 Fries, L., 437 Friesen, B. S., 477, 518 Frisch-Niggemeyer, W., 484 Fritz, I. B., 217 Fritz, J. C., 404, 405 Fritz, R. D., 595 Frohardt, R. P., 210 Frohwirt, N., 691 Fromageot, C., 162, 367, 558 Fromageot, P., 352 Fromm, H. J., 18, 34, 36, 93, 224, 308 Fromme, I., 113 Fromme, O., 146 Frommhagen, L. H., 485 Frontali, N., 382 Frontcelli, C., 526 Frost, D. V., 405 Frowein, R. A., 670 Fruit, A., 558 Frunder, H., 334, 670. 672, Frush, H. L., 463 Fruton, J. S., 52, 61, 65, 66, 84, 173, 233 Fry, G. S., 393, 394, 395, 396 Fryth, P. W., 115 Fuente, G. de la, 75, 312 Fugmann, U., 318 Fujii, S., 66 Fujimoto, Y., 477, 513 Fujino, M., 568 Fujino, Y., 131, 142, 143 Fujioka, H., 170 Fujita, A., 447 Fukuda, M., 566 Fukuhara, H., 532 Fukumoto, J., 122 Fukuyama, T., 353, 423 Fulco, A. J., 280, 281, 661, 664 Fuller, H. L., 407 Fullmer, H. M., 419

Fulthorpe, A. J., 615 Funatsu, M., 174 Funk, H. B., 440 Furlenmeier, A. E., 555, 556 Furst, S. S., 375 Furth, J., 582, 584, 587, 588, 589 Fusari, S. A., 210 Futterman, S., 310, 443, 684

G

Gabin, J. J., 406 Gaboleteau, C., 54, 55, 56 Gabrielson, R., 586 Gaddie, R., 441 Gadsden, E. L., 202 Gal, E. M., 681 Galanos, D. S., 131, 142, 144 Galansino, G., 569 Gale, C., 406, 407, 564 Gale, E. F., 530 Gale, P. H., 399 Gallagher, C. H., 373 Galland, M. B., see Bettrex-Galland, M. Gallop, P. M., 66, 67, 177 Galton, V. A., 199 Galyas, E., 218 Gambal, D., 371 Gamble, G. L., 696, 697 Gander, J. E., 233 Gander, J. E., Ganguly, J., 286 Gapp, F., 183 Garattini, S., 282, 374 Garceau, A. J., 591 Gardner, A. F., 247 Garen, A., 492 Garguly, J., 99 Garilhe, M. P. de, see Privat de Garilhe, M. Garner, E. F., 108 Garrett, R. H., 692 Garrigan, O. W., 144, 369 Garry, B., 578 Gartler, S. M., 245 Garvey, J. S., 614, 620 Garvin, L. F., 404 Gary, S., 29 Gassman, B., 425 Gastager, H., 379 Gatt, S., 311 Gaudry, R., 187 Gauhe, A., 119 Gausman, F., 646 Gavin, J J., 439 Gavosto, F., 613 Gawehn, K., 582 Gawron, O., 29 Gayle, G. M., 565 Gehrig, R. F., 265

Geiduschek, E. P., 466, Geiger, D. W., 378 Geissler, A. W., 582 Gelbard, A., 265 Gelber, D., 488 Geller, E., 240 Gellrich, M., 20 Gemzell, C. A., 563 Gendre, T., 134 Genovese, E., 563 Gent, W. L. G., 374 Genuth, S. M., 526 Geolkel, A. E., see Engelhardt-Geolkel, A. George, M., 592, 593 Gergely, J., 262 Gerguson, T. M., 393 Gerlach, E., 29 Gershoff, S. N., 421, 446 Gery, I., 230 Geschwind, I. I., 553, 554, 557, 562, 564 Gewitz, H. S., 582 Gey, G. O., 306 Gey, M. K., 306 Geyer, R. P., 284 Ghobar, A., 597 Ghogh, J. J., 415 Gholson, R. K., 236 Ghosh, J. J., 323, 376 Ghosh, N. C., 323 Ghosh, N. L., 415 Giacobini, E., 382 Gibbs, J. H., 154 Gibbs, M., 318, 327 Gibian, H., 360 Gibson, D. M., 283, 284, 285, 429, 681 Gibson, F., 235 Gibson, J. G., 642 Gierer, A., 477, 478, 482, 517, 518 Giesemann, H., 189 Gifford, E. M., Jr., 511 Gigg, R. H., 131, 144, 145, 146 Gigon, A., 638 Giguere, J., 132, 133 Gil-Av, E., 666 Gilbert, G. A., 121, 122 Gilbreath, J. C., 404 Gillespie, R., 300 Gilletti, J. R., 681 Gillies, N. E., 515, 517, 518, 691 Gilmour, C. M., 324 Gilon, E., 380 Gilvarg, C., 96, 219, 262, 670 Gimmy, J., 589 Ginetzinsky, A. G., 553 Ginjaar, L., 56 Ginoza, W., 477, 483, 519 Ginsburg, A., 76, 92, 308 Ginsburg, S., 384

Ginsburg, V., 413, 681 Ginzburg, Y., 309 Giordano, L., 618 Giovanelli, J., 270, 275 Girad, C. B., 250 Gish, D. T., 483, 550 Gjønnes, J., 125 Gladner, J. A., 25, 46, 48 Gladstone, L., 82 Glaid, A. J., 29, 36, 670 Glaser, L., 81 Glaser, W., 643 Glasky, A. J., 318 Glass, G. B. J., 440 Glazer, A. N., 171 Gleen, J. L., 687, 689 Glick, D., 449 Glicksman, A. S., 643 Glock, G. E., 318, 672, 675, 679, 681 Gloor, U., 397, 398, 639, 691, 692, 693 Gmelin, R., 210 Godden, W., 645 Goelkel, A. E., see Engelhardt-Goelkel, A. Goettsch, M., 394, 395 Goey, J. de, 655 Gohlke, R. S., 657 Golay, M. J. E., 654, 656 Goldberg, I. H., 97, 143, 348, 357 Goldberg, M., 638 Goldberg, R., 628 Goldé, A., 585 Goldemberg, S. H., 77, 88, 297 Goldin, A., 208, 425, 426 Goldman, D. S., 209, 314 Goldman, E., 372 Goldman, M., 286 Goldschmidt, S., 670, 672, 673 Goldsmith, R. E., 646 Goldstein, F., 243 Goldstein, F. B., 212 Goldstein, I. J., 107, 108, 110, 124 Goldstein, J., 594 Goldstein, L., 511, 512 Goldstein, M., 233, 679, 681, 682 Goldwasser, E., 527 Gollub, E. G., 594 Golomb, S. W., 509 Golubow, J., 49, 52 Gomes, F. P., 552 Gomex, F., 244 Gon, K., 636 Gonnard, P., 233, 241 Goodman, D. S., 265, 282 Goodman, L., 202 Goodman, M., 189, 191, 193, 628 Goodwin, H., 367 Goodwin, J. F., 299 Goodwin, T. W., 446

Goodwin, W. L., 691 Goodyear, S., 397, 402 Gordon, G. S., 643 Gordon, M. P., 595 Gordon, M. W., 236 Gordon, R. S., 401, 407 Gordon, W. S., 403 Gordy, W., 32 Gore, I. Y., see Youkotsky Gore, I. Gorer, P. A., 579, 580 Gorguraki, V., 64 Gori, G. T., 124 Goriachenkova, E. V., 230 Gorin, P. A. J., 114, 119 Gorup, B., 191 Goss, M. F., 583 Goss, W. A., 227 Gosselin, L., 681 Got, R., 566, 567 Gotlieb, T., 520 Gotovtseva, E. V., 379 Gots, J. S., 594 Gotto, A. M., 318 Gottschalk, A., 115, 303, 486 Gould, B. S., 227 Gould, E., 681 Gould, R. G., 681 Goulden, F., 243 Grabar, P., 609, 611, 615, 619, 622 Grabe, B., 692 Grace, J. T., 583, 589 Grace, J. T., Jr., 586 Graff, S., 681, 682, 683 Graffi, A., 487, 588, 589 Graham, A. F., 505 Graham, C. E., 562 Graham, E. R. B., 115, 486 Graham, J. S. D., Graham, O. L., 598 Graham, S., 323 Gran, F. C., 314 Grant, A. B., 393 Grant, C. A., 392 Grant, N. H., 47, 48, 55, 66 Grant, P. M., 119 Grant, R. L., 332 Gräsbeck, R., 438, 439 Grassetti, D. R., 95 Grassmann, W., 193, 202, 222 Graves, D. J., 25, 89 Gray, G. M., 366 Gray, J. E., 595 Gray, L. F., 438 Gray, S. J., 249 Graymore, C. N., 310 Grazi, E., 320 Green, A. L., 56, 58, 384, 385 Green, D. E., 18, 19, 396, 398, 674, 687, 688, 691,

692, 693, 694 Green, D. W., 167 Green, F. O., 311, 312 Green, H., 620 Green, H. N., 580 Green, J. B., 243, 379, 381 Green, J. R., 96 Green, N. M., 226 Green, U., 401 Greenbaum, A. L., 551 Greenberg, D. M., 21, 76, 209, 220, 225, 228, 238, 444, 445, 644, 681 Greenberg, G. R., 75, 495 513 Greenberg, J., 214 Greenberg, L. J., 449 Greene, A. A., 371 Greene, C H., 638 Greengard, O., 532, 536 Greenlees, J. L., 591, 690 Greenstein, J. P., 188, 192, 212, 671 Greenwood, C. T., 121, 122, 123 Greep, R. O., 563 Greer, S., 515 Gregerman, R. I., 236 Gregoire, S. B., see Bricteux-Gregoire, S. Gregory, J. D., 347-64; 350, 353, 354, 355 Gregory, K. F., 670, 671 Gregory, R., 635 Greiling, H., 97 Grein, L., 95, 670 Greipel, M., 244 Grenson, M. D. D., see De Deken-Grenson, M. Gresham, E., 616 Gresser, W., 111 Greull, G., 21, 283, 285, 448, 681 Greville, G. D., 313 Grew, A. E., 458 Grey, C. E., 584, 586, 587, 589 Gribetz, H. J., 247 Griffin, A. C., 582, 586, 587 Griffin, B. E., 456 Griffith, T., 238, 327, 425 Griffith, W. H., 244 Griffiths, J. M., 591 Grisolia, S., 81, 313 Groblewski, G., 385 Grodsky, G. M., 568, 569 Grof, L., 143, 144 Groh, M., 448 Grollman, A. P., 415, 679, 681 Grommers, E. P., 193 Grona, M. L., 96, 223, 429 Gros, C., 558 Gros, F., 525-46; 526,

529, 539, 540 Gros, P., 619 Gross, A., 511, 598 Gross, A. J., 232 Gross, A. M., 557 Gross, D., 526, 534 Gross, E., 197 Gross, F., 201 Gross, H., 189 Gross, J., 226, 247, 419 Gross, L., 588 Grosse, A., 371 Grossi, L. G., 530 Grosvenor, C. E., 564 Groth, D. P., 370 Grubbs, G. E., 587 Grunberg-Manaso, M., 33 Grundfest, H., 215 Grunwald, E., 51 Grushko, N. I., 192 Grzybowsky, A. G., 193 Guernet, M., 106 Guha, B. C., 211, 212, 323, 415, 416 Guha, S. R., 376 Guidoni, A., 54, 55 Guillemin, R., 203, 548, 549, 558 Gundlach, H., 26, 168, 170 Gunja, Z. H., 124 Guntelberg, A. V., 48 Gunter, H., 483 Gurd, F. R. N., 193 Gurin, S., 262, 282, 284, 681 Gurvich, A. E., 616, 620, 623 Gurvitch, A. E., see also Gurvich, A. E. Guryanova, E. N., 192 Gustavson, K. H., 177 Gutfreund, H., 37, 49, 51, 52, 58, 59, 60, 61, 62, 529 Guthrie, R. D., 107 Gutman, A. B., 208, 528 Gutowsky, H. S., 29 Guttmann, S., 197, 198, 550, 551, 555, 556, 557 György, P., 394 Györgyi, A. G. S., see Szent-Györgyi, A. G. Györgyi, A. S., see Szent-

Györgyi, A.

Haagensen, C. D., 488, 585 Haas, F. L., 514 Haas, L. F., 30 Haas, V. H., 599 Habermann, V., 481, 595 Hackney, J. H., 319, 682 Hadjiioannou, T. P., 642 Haefele, L. F., 184, 185 Haemmerli, A., 638

Hafez, E. S. E., 565 Hagen, J. M., 570 Hagen, P. S., 439 Hager, L. P., 29, 34 Hagerman, D. D., 306, 684 Hagihara, B., 23, 48, 690 Haguenau, F., 487, 585 Hakala, M. T., 591, 597, 598 Hakim, A. A., 82, 456 Hakomori, S.-I., 117 Haldane, J. B. S., 37 Hale, W. H., 404 Hall, C. E., 491 Hall, D. A., 47 Hall, G. E., 137 Halliday, J. W., 431 Hallmann, I., 319, 331 Halpern, E., 636, 638 Halpern, M., 122 Halpern, R. M., 244 Halsey, Y. D., 569 Halvorson, H., 324, 505 Ham, A. W., 586, 588 Ham, K. N., 247 Hamburger, C., 567 Hamdy, A., 406, 407 Hamers, R., 540, 593, 598 Hamers-Casterman, C., 540, 593, 598 Hamerton, J. L., 577 Hamilton, G. A., 20, 429 Hamilton, J. K., 108, 112 Hamilton, L. D., 503 Hamilton, M. G., 536, 563 Hamilton, R. J., 665 Hammar, C. H., 213 Hammarsten, J. F., 642, 643, 645 Hammarsten, O., 636 Hammen, C. S., 327 Hammett, L. P., 464 Hammond, B. R., 52, 59, 60, 61, 62 Hampton, A., 591 Hanahan, D. J., 136, 139, 431 Hanby, W. E., 159, 161, 171 Handler, P., 27, 425, 426, 599 Handschumacher, R. E., 589, 591, 592, 595, 596, 598, 599 Haneke, H., 190 Hanke, H. E., 404, 406 Hankes, L. V., 236 Hanna, S., 644, 646 Hannig, K., 186 Hansen, A., 56 Hansen, O. H., see Holm-Hansen, O. Hansen, R. G., 300 Hansen, R. P., 662 Hansen, W. G., 422

Hanson, H., 66

Hanson, H. H., 248 Hanson, K. M , 377 Hanson, L. E., 399, 400 Hanssen, K. S., see Serck-Hanssen, K. Hanzon, V., 382 Haq, S., 118 Harada, T., 355 Harbers, E., 527, 595 Hardenbrook, H., 300 Hardin, R. L., 616 Harel, J., 589 Harington, C. R., 173 Harker, D., 166 Harley, J., 653 Harm, W., 517 Harmon, A., 570 Harms, R. H., 406 Harns, H., 244 Harold, F. M., 517 Harper, A. E., 333, 338, 426 Harris, A. Z., 329 Harris, E. R., 666 Harris, G., 568 Harris, G. W., 548 Harris, H., 250, 509 Harris, J. I., 198, 553, 554, 555, 557 Harris, J. O., 265 Harris, K., 570 Harris, L. E., 447 Harris, P. L., 396, 402 Harris, R. J. C., 584, 585 Harris, S., 621, 622 Harris, T. N., 621, 622 Harrington, H., 505, 595 Harrington, W. F., 156, 157, 158, 163, 165, 177, 178, 460 Harrison, B., 385 Harrison, H. E., 644 Harrison, J. W. 249 Harrison, K., 692 Harrison, M., 644, 646 Harrison, P., 167 Harrison, W. H., 33 Harrop, G. A., 682 Hart, E. B., 400 Hart, E. W., 250 Hart, L. I., 438 Hart, R. G., 477, 479 Hartigan, J., 120 Hartley, B. S., 45-72; 25, 47, 48, 53, 55, 57, 171 Hartley, J. W., 586, 587, 588 Hartley, W. J., 393 Hartman, S. C., 18, 29, 93, 426, 444, 463, 589, 592, 593, 596, 599 Hartmann, G., 529 Harvey, D. G., 202 Haschemeyer, R., 477, Hasegawa, E., 447 Hasenmaier, G., 210

Hashizume, T., 112 Haskell, T. H., 115, 210 Haskins, R. H., 131, 132 Haškova, V., 622 Hass, L. F., 33 Hassall, C. H., 196 Hassan, M. U., see Ul Hassan, M. Hassid, W. Z., 20, 33, 76, 84, 85, 89, 113, 120, 135, 299, 300, 302 Hastings, A. B., 303, 332, 333, 335, 337, 682, 683 Hatch, F. T., 212, 224 Hatch, M. D., 310, 311, 314 Hatefi, Y., 396, 398, 674, 681, 686, 690, 693, 694 Hattori, S., 194 Hauenstein, J. D., 162 Haugaard, N., 313 Hauge, B. N., 248 Haughton, B. G., 422 Haughton, G., 54 Hauk, R., 88, 298 Haupt, I., 669, 670 Haurowitz, F., 609-34; 157, 609, 611, 612, 613, 614, 616, 618, 620, 621, 622, 623, 628, 629 Hausberger, F. X., 570 Hauschild, A. H. W., 208 Hauschka, T. S., 577, 586 Hauser, G., 114, 133 Häussler, E. P., 636 Haven, F. L., 371 Haverback, B. J., 248 Hawes, R., 240 Hawke, J. O., 662 Hawker, R. W., 552 Hawkins, J. D., 613, 614, 616, 621, 629 Haworth, N., 609 Hawthorne, J. N., 136, 137, 139, 144, 368, 431, 432 Hay, G. W., 110 Hayaishi, O., 95, 210, 237, 275, 681 Hayano, M., 681 Hayashi, I., 454 Hayashi, J. A., 309 Hayashi, M., 208 Hayashi, T., 217 Hayashida, T., 563 Hayaski, K., 221 Hayden, A. R., 217 Hayes, H., 280 Haynes, R. C., 559 Hays, E. F., 588 Hayward, A. C., 264 Head, F. S. H., 106, 110 Heald, P. J., 375 Heard, R. D. H., 282 Hearn, W. R., 558 Heath, E. C., 92

Hebel, H.-J., 191 Hecht, L. I., 82, 526, 527, 528, 529, 530 Hechter, O., 330 Hedegaard, J., 228 Hedgley, E. J., 107 Hedinger, V. C., 248 Hedrick, L. R., 193 Hegsted, D. M., 446 Hehre, E. J., 301 Heidelberger, C., 527, 582, 583, 595, 597 Heidelberger, M., 609, 610, 616, 620 Heideman, M. L., Jr., 560, 561 Heijkenskjöld, F., 562, 563 Heinen, W., 265 Heinert, D., 423 Heinicke, R. M., 64 Heinz, F., 76, 313 Heise, J. J., 32 Heisler, C. R., 443 Heiss, R., 190 Hele, P., 262, 283 Helferich, B., 118 Heldorf, A., 76 Helleiner, C. W., 212, 224 Heller, B. I., 643 Heller, C. G., 565 Heller, E., 586 Heller, H., 549, 552 Hellerman, L., 27, 213, 670 Hellström, H., 674 Helmreich, E., 670, 672, 673 Hemming, F. W., 398, 693 Hemphill, S. C., 595 Hems, R., 214, 672, 673 Henderson, J. F., 595 Henderson, K., 492 Henderson, L. M., 236, 238, 424, 425, 446 Henderson, R. B., 244 Henderson, R. W., 301 Henderson, W., 407 Hendrix, W. L., 406 Heneage, P., 214 Henery-Logan, K. R., 196 Henis, D. B., 282 Henle, W., 486, 520, 587 Henning, U., 78, 91, 98, 263 Henriques, O. B., 67 Henriques, S. B., 67 Henry, C., 480, 518 Henry, R., 360 Heppel, L. A., 74, 454, 644 Herbert, E., 527 Herbert, V., 406, 439, 440 Herman, C., 226, 227, 419 Hermann, P., 66 Hermann, R. L., 599 Hermans, J., Jr., 507 Hernandez, T., 113

Herold, E., 394, 395 Herr, E. B., 32 Herring, J. L., 243 Herrington, K. A., 590 Herriott, R. M., 489, 490 Hers, H. G., 306, 679, 680, 681 Hersh, R. T., 484 Hershey, A. D., 505, 507 Herzfeld, E., 638 Hess, B., 35, 670, 671, 684, 689, 695 Hess, E. L., 613 Hess, G. P., 52, 57, 67, 550 Hess, R., 644, 646 Hess, W. C., 379, 380 Hestrin, S., 90, 105, 106 Hewitt, L. F., 156 Hewitt, O. H., 404 Heyningen, W. E. van, 144 Heyns, K., 67, 117, 195 Hiatt, H. H., 308, 309. 320, 582, 679, 681, 682 Hickman, J. W., 321, 322, 681 High, L. B., 665 Higson, H. M., 137 Hill, B. R., 671 Hill, F. W., 393, 404 Hill, R., 303 Hill, R. J., 175, 217, 236, 681 Hill, R. L., 23, 46, 55, 56, 57, 59, 63, 64, 151, 167, 170, 171, 172, 174, 175, 176, 568, 569 Hill, R. T., 199 Hill, T. L., 154 Hille, E., 202 Hiller, A., 107 Hilton, J. G., 198 Hilton, J. L., 448 Hilz, H., 273, 348, 349, 350 Himes, J. B., 202 Himmelspach, K., 113 Hincenbergs, I., 279 Hinds, H. A., 505 Hine, D. C., 441, 443 Hippel, P. H. von, 460 Hirs, C. H.W., 151, 167, 169, 456 Hirsch, H. M., 586 Hirsch, J., 660 Hirsch, M.-L., 526 Hirschfelder, A. D., 642 Hirst, E. L., 105, 110, 124, 296 Hirst, G. K., 520 Hirzberg-Minzly, Y., 666 Hitchings, G. H., 443, 445 Hiwett, J., 226, 227, 419 Hizukuri, S., 123 Hlad, C. J., 570 Hoagland, M. B., 28, 525, 526, 528, 529, 530

Hoard, D. E., 471 Hoare, D. S., 219 Hoban, N., 119 Hobbiger, F., 215 Hobbs, D. C., 276, 681 Hoberman, H. D., 317, 679, 682, 683 Hobson, P. N., 124 Hoch, F. L., 36, 670 Hochella, N. J., 332 Hochster, R. M., 318 Hock, A., 391, 392, 394, 396, 405 Hockstra, W. G., 392 Hodges, R., 665 Hodges, R. E., 449 Hodgson, B., 265 Hoeksema, H., 595 Höfer, A., 197 Hoffbauer, F. W., 394 Hoffeld, H., 569 Hoffman, C. H., 398, 693 Hoffman, E., 360 Hoffmann-Ostenhof, O., 73-104; 73, 74, 76 Hofmann, K., 282, 555, 556 Hofreiter, B. T., 110 Hofstee, B. H. J., 49, 50 Hogue, D. E., 392, 395, 397 Hohnholz, E., 32, 670 Hohorst, H. J., 670, 675, 676 Hokin, L. E., 77, 140, 141, 373, 431, 559 Hokin, M. R., 77, 140, 141, 373, 431, 559 Holborow, E. J., 611 Hold, S. J., 487 Holden, J. T., 423 Holden, M., 458 Holdsworth, E. S., 441 Holeysovsky, V., 56 Holland, G. F., 568 Holland, J. J., 480, 482, 487 Hollander, N., 566, 684 Hollander, V. P., 566, 684 Holldorf, C., 313 Holldorf, V. A., 313 Holleman-Dehove, J., 202 Holleman, J. W., 202 Holley, R. W., 525, 528 Hollingworth, B. R, 164 Hollmann, S., 322, 679, 681 Holloway, R. C., 613 Holly, F. W., 114 Holman, H. R., 611 Holman, R. T., 278, 279, 280 Holmberg, E. A. D., 595 Holme, T., 123 Holmes, B. E., 563 Holmes, K. C., 467, 478 Holmgård, A., 143, 353,

357

Holm-Hansen, O., 327, 329 Holmstedt, B., 382 Holt, C. V., 319, 331 Holt, L. E., Jr., 244 Holt, L. V., 319, 331 Holt, N. B., 114 Holt, S. J., 585 Holton, F. A., 674, 684, 690 Holz, E., 670 Holzer, E., 675 Holzer, H., 76, 311, 313, 321, 670, 672, 673, 675, 681, 684 Homan, J. H. D., 568 Homann, J., 670 Honda, H., 552 Honeyman, J., 107, 108 Honzl, J., 550 Hooper, I. R., 115 Hope, D. B., 225 Hopsu, V., 382 Horecker, B. L., 92, 309, 320, 327, 582, 679, 681, 682 Horer, O., 123 Hörhammer, L., 145 Horibata, K., 624 Horie, Y., 319 Horio, T., 690 Hörmann, H., 202, 222 Horn, H. D., 670 Horne, R. W., 487, 489, 493 Horner, F. A., 246 Horner, W. H., 226 Horning, E. C., 250 Horning, M. G., 27, 681 Horowitz, J., 539, 616 Horowitz, N. H., 538 Horrath, I., 243 Horton, 112 Horton, R. H., 236 Horwitt, M. N., 377 Horwitz, W., 407 Hosein, E. A., 217 Hoselkorn, R., 478 Hosoda, S., 447 Hosoya, N., 275 Hotta, Y., 463, 510, 593 Hough, L., 110, 112, 116, 307 Householder, D. E., 558 Hove, E. L., 393, 394, 395, 396, 397 Howard, A. N., 559 Howard, K. S., 557 Howatson, A. F., 586, 588 Howe, C., 610 Howe, C. D., 589 Howell, J. M., 378 Howell, J. S., 378 Howton, D. R., 278, 280 Hoyle, L., 484, 486 Hoyt, R. E., 618 Hrubesova, M., 622 Hsien, W., 244

Hsu, J. M., 441 Huang, H. T., 220 Huang, S., 470 Hübener, H. J., 686, 687 Hübscher, G., 139, 208, 431, 432 Hudson, P. B., 23, 505 Huebner, R. J., 586, 587, 588 Huennekens, F. M., 21, 95, 443, 598, 674, 681 Huff, E., 670 Huff, J. W., 422 Huffman, G. W., 108, 112 Huggins, C., 670, 671 Huggins, C. G., 141, 199, 368 Hughes, D. E., 237, 426 Hughes, G., 107 Hughes, M. S., 240 Hughes, P. E., 581 Hughes, R. C., 123 Hughes, W. L., Jr., 158 Huguenin, R. L., 555, 556 Hukovic, S., 558 Hulcher, F. H., 90 Hulsen, W., 467, 468 Hülsmann, W. C., 674, 684, 696 Hülsmann, W. L., 694 Hultin, T., 531, 532, 681 Hummel, J. P., 457 Hummler, K., 617 Humphrey, J. H., 615, 618, 619 Humphreys, G. K., 445 Humphreys, J. S., 96, 223, Humphreys, S. R., 425, 426 Hunt, A. L., 237, 426 Hunt, A. M., 419 Hunt, J. A., 175, 538 Hunter, F. E., Jr., 405, BRE Hunter, G., 642 Hunter, M. J., 193, 587 Hunter, W. S., 587 Hupla, S., 626 Huppert, H., 635 Huppert, J., 480, 481, 492, 518, 589 Hurlbert, R. B., 586, 599 Hurley, J. V., 247 Hurlock, B., 684 Hurst, P. L., 245 Hurwitz, J., 83, 92, 308, 320, 321, 510, 527 Husain, I., 67 Husemann, E., 118 Hutchens, T. T., 289 Hutchings, B. L., 115 Hutchinson, W. D., 176 Hutchison, D. J., 590, 591, 592, 593, 600
Hutner, S. H., 440, 447 Hvidsten, H., 404 Hvidt, A., 160

Hyatt, M., 229 Hyde, P. M., 335, 570 Hylin, J. W., 96 Hylin, V., 591

1

Iachan, A., 202 Ibsen, K. H., 312 Ichihara, A., 76 Ichihara, K., 239 Ickes, C. E., 671 Iguchi, N., 67 lizuka, T., 351 Ikawa, M., 146, 209, 422, 423 Ikeda, K., 438 Ikenaka, T., 64 Ikutani, I., 186 Iland, C. N., 611 Ilbert, J. F., 622 Ilten, D., 626 Imai, K., 446 Imai, Y., 681 Inagaki, M., 213 Inamine, E., 229 Inamori, K., 239 Incefy, G. E., 304 Ingbar, S. H., 335 Ingeborg, C. R., 214 Ingersoll, F. M., 566 Ingle, T. R., 119 Ingold, C. K., 195 Ingraham, J. S., 611, 613, 618, 629 Ingraham, L. L., 18, 19, 28, 81 Ingram, G. R., 406 Ingram, V. M., 175, 538 Inman, R. B., 471 Innes, J. R. M., 378 Inoue, K., 552 Inskip, W. M., 249 Insull, W., Jr., 660 Irie, M., 454, 456 Irreverre, F., 217, 376 Irsay, R. D., 202 Irvin, J. L., 202, 635, 637, 638 Irwin, M., 587 Isaac, P. C. G., 666 Isbell, H. S., 110, 114, 463 Iseki, S., 610 Iseler, P. E., 585 Iselin, B. M., 137, 189, 198, 201, 555, 556 Isenberg, I., 447 Isherwood, F. A., 416 Ishihara, Y., 568 Ishikawa, S., 323, 415, 681 Ishimoto, M., 351 Isler, O., 398, 693 Isler, P., 248 Isliker, H. C., 615 Issacs, A., 486 Isselbacher, K. J., 353

Itabashi, M., 355 Itano, H., 176 Ito, N., 81, 313 Ito, T., 319 Ito, Y., 568 Iyer, G. Y. N., 242 Izumiya, N., 49, 66

3

Jackson, D. A., 243 Jackson, F. L., 690 Jackson, J. J., 690 Jackson, J. T., 238 Jackson, R., 443 Jacob, F., 508, 537, 540. 541, 542, 578 Jacob, M. I., 283 Jacobs, A. G., 332 Jacobs, S., 243 Jacobsen, C. F., 152 Jacobson, K. B., 672, 673, 674 Jacobson, N. L., 404, 405 Jacquemin, C., 234 Jacquez, J. A., 600 Jacquot-Armand, Y., 629 Jaenicke, L., 681 Jaffe, J. J., 598 Jagannathan, V., 30 Jahrmärker, H., 610 Jakoby, W. B., 95, 218, 275, 277, 315, 422 Jamada, K., 681 James, A. T., 280, 649, 650, 659, 660, 662, 663, 664, 665 James, P. C. F., see Fitz-James, P. C. James, W. O., 316 Jamieson, G. A., 225 Jang, R., 323, 416, 417 Janke, J., 29 Janowsky, O., 222 Janrola, A., 249 Jansen, E. F., 24 Jansz, H. S., 25, 56, 383, 384 Jaquenoud, P. A., 197, 200, 550, 551, 555, 556, 557 Järnefelt, J., 398, 691 Jarrige, P., 360 Jarvis, F. G., 132 Jasmin, R., 444 Jatzkewitz, H., 143 Jauregui, J., 170 Jean, L. H. C., see Chopard-dit-Jean, L. H. Jeanloz, R. W., 115, 117 Jeanrenaud, B., 335 Jeckel, D., 669, 670 Jedeikin, L. A., 672 Jeener, R., 496, 593, 598 Jeffay, H., 419 Jeker, M. D., see Menard-Jeker, D.

Jencks, W. P., 39, 229 Jenke, M., 636, 637, 638 Jenkins, R. J., 470 Jenkins, W. T., 95, 241, 421 Jennings, R. R., 51 Jensen, L. S., 405 Jensen, P. K., 223, 687 Jensen, V., 308 Jepson, J. B., 239, 250 Jerne, N. K., 496, 624 Jesaitis, M. A., 489 Jirgensons, B., 64, 156, 670 Jöbsis, F., 686 Joel, C. D., 693 Joffe, S., 300 Jöhl, A., 196, 550 John, D. I., 196 Johnson, B. C., 212, 237, 397, 402, 426, 441, 530 Johnson, D. L., 115 Johnson, L. H., 569 Johnson, M. J., 132 Johnson, M. K., 381 Johnson, P. C., 440 Johnson, R. M., 282 Johnson, R. R., 221 Johnson, W., 444 Johnson, W. H., 26 Johnston, A. E., 135 Johnston, C. G., 635, 637, Johnston, J. E., 404 Johnston, M. J., 306 Johnston, R. B., 52 Jolchine, G., 326 Jolles, A., 635, 636 Jollès, P., 147, 170, 171 Jollès-Thaureaux, J., 170 Jolley, R.L., 319 Jones, A., 643 Jones, A. S., 467 Jones, E. P., 143 Jones, E. R. H., 665 Jones, G., 120, 123, 295 Jones, I. G., 123 Jones, J. D., 447 Jones, J. K. N., 111, 113, 118, 119 Jones, M. E., 273 Jones, R. T., 176 Jonsen, J., 307 Jonsson, B., 169 Joppich, G., 637, 638 Jordan, C. W., 563 Jordan, D. O., 471 Jordan, E., 235 Jordan, R. M., 404, 406 Josefsson, L., 152, 153 Joseph, J. P., 107 Josephson, B., 635, 636, 638 Joshi, S., 238 Josse, J., 75, 83, 494, 495, 513, 584 Jost, K., 187

Joyce, B. K., 81, 313 Jukes, T. H., 400, 403 Jungherr, E. L., 397, 402, 406 Jungmer, G., 636 Jungwirth, C., 76 Jutisz, M., 565, 567 Jütting, G., 21, 99, 287, 427, 428, 429, 430

### E

Kabat, E. A., 120, 139, 609, 610, 611 Kadis, S., 331 Kahler, H., 586, 587 Kahn, J. S., 26 Kaji, A., 97, 352, 355 Kajtar, M., 611 Kalan, E. B., 29 Kalckar, H. M., 305, 681 Kaldor, G., 597 Kaleita, E., 339 Kalinsky, J. H., 636, 638 Kalk, H., 670 Kalle, G. P., 594 Kalnitsky, G., 170, 457 Kalter, H., 446 Kalyankar, G. D., 83, 229 Kamin, H., 687 Kaminski, M., 610 Kamiya, H., 145 Kammen, H. O., 599 Kampschmidt, R. F., 691 Kamrin, A. A., 581 Kanazir, D., 515 Kanda, M., 321 Kandler, O., 327 Kanfer, J., 322, 323, 415, 417, 479, 681 Kanowski, T. S., 234 Kaper, J. M., 479, 518 Kaplan, H. S., 578, 588 Kaplan, L., 202, 595, 600 Kaplan, L. A., 670 Kaplan, M. H., 613, 617, 618 Kaplan, M. L., 586, 588, 589 Kaplan, N., 335 Kaplan, N. O., 425, 426, 427, 670, 671, 672, 673 674, 675, 680, 684, 686, 687 Kaplanskii, S. Ya., 209, 244 Kapner, R. B., 616 Kappeler, H., 198, 201, 555, 556 Kapphahn, J. I., 670, 671, 672, 673 Kára, J., 82, 595 Karagounis, G., 666 Karakova, V. N., 177 Karasek, M. A., 569 Karcher, D., 374, 380 Karges, O., 670 Kari, S., 220

Karler, A., 478 Karlson, R. H., 159 Karmen, A., 242, 654, 658 Karnovsky, M. L., 114, 133, 143, 371, 693 Karpeyski, M. Y., 202 Kartha, G., 177 Kartz, H., 487 Karush, F., 157, 158, 616, 626 Kasbekar, D. K., 441 Kashelikar, D. V., 118 Kassanis, B., 483, 519 Kassel, R., 586, 588, 589 Kassell, B., 55 Kassenaar, A. A. H., 561 Kastelic, J., 404 Kästner, C., 191 Kästner, J. von B., see Bulow-Kästner, J. von Katagiri, H., 446 Katagiri, M., 275, 320 Katano, H., 554 Katayama, I., 636, 637, 638 Katchalski, E., 64, 67, 156, 158, 159, 163, 172, 555, 611 Katchalsky, A., 629 Katchen, B., 621 Kato, G., 62, 172 Kato, N., 441 Kato, S., 355 Katsoyannis, P. G., 193, 550 Katsuki, H., 429 Katunuma, N., 84 Katz, E., 227 Katz, J., 319 Katzen, H. M., 123 Kaudewitz, F., 515, 516 Kauffman, D. L., 25, 56 Kauffmann, G., 622 Kaufman, B. T., 686 Kaufman, S., 21, 231, 233, 245, 262, 446, 681 Kaufmann, B. P., 456 Kauzmann, W., 154, 156, 159, 165 Kawada, N., 275 Kawaguchi, S., 636 Kawakami, M., 351 Kawamata, J., 496, 507, 601 Kawanishi, Y., 170 Kawasaki, T., 557 Kawishwar, W. K., Kay, C. M., 155, 157, 158 Kay, D., 492 Kay, L. D., 329, 681 Kay, R. E., 225, 306 Kayaishi, M., 214 Kaye, A., 510, 527 Kaye, R. M., see McMaster-Kaye, R. Kean, E. L., 432 Keech, D. B., 97, 318, 326, 327 Keele, K. D., 243

Keen, B. C., Jr., 405 Keil, B., 56 Keilin, D., 690 Keir, H. M., 504 Kellenberger, E., 489, 493, 496 Keller, D. L., 671, 677 Keller, E. B., 525 Keller, L., 66 Keller, P. J., 46, 47 Keller, W., 670 Keller-Schierlein, W., 195 Kelley, T. R., 657 Kellner, G., 312 Kelly, H. J., 599 Kelly, S., 416, 567 Kelly, W., 250 Kelner, A., 517 Kemp, J. W., 467 Kemp, K. C., 52 Kemp, P., 432 Kempf, J. E., 484 Kempner, E. S., 535 Kendall, F. E., 636, 637, Kendrew, J. C., 166 Kenkichi, T., 234 Kennedy, E. P., 85, 86, 139, 140, 208, 431, 670 Kenner, G. W., 191, 463, 466 Kenney, F. T., 246 Kennison, B. D., 692 Kenny, A. J., 66, 570 Kent, A., 21, 30, 89 Kent, P. W., 348, 353, 354 Keoppe, R. E., 236 Keppler, J. G., 659, 661, 662 Kerby, G. P., 249 Kerly, M., 310 Kernst, B. A., 536 Kerr, R. J., 49, 50, 51 Kersten, H., 418, 681, 698 Kersten, W., 418, 698 Kessel, I., 98, 286 Kessler, G., 124 Keston, A. S., 621 Keulemans, A. I. M., 649 Keuning, F. J., 428 Keys, A. J., 57 Khan, A. W., 300 Khollo, V., 215 Kholo, Y., 121 Khomutov, R. M., 202 Khorana, H. G., 448, 460 Kibrick, A., 247 Kielley, W. W., 695, 696, 697 Kier, L. C., 636, 638 Kies, M. W., 228 Kiessling, H., 548 Kiho, Y., 496 Kikuchi, G., 91 Kikutani, M., 566 Kilby, B. A., 119, 300 Kilgore, W. W., 322

Kilgour, G. L., 137 Kilham, L., 589 Killam, K. F., 215, 420 Killian, J. A., 636, 637, 638 Kimball, R. F., 509 Kimbel, P. R., 332 Kimbro, E. L., 670 Kimmel, J. R., 46, 55, 56, 57, 59, 62, 63, 64, 151. 167, 170, 171, 174, 175, 176 Kimura, R., 621 Kimura, T., 426, 687, 688 King, C. G., 416, 417 King, F. E., 201 King, H. K., 422, 423 King, K. W., 90 King, T. E., 306, 319, 690 King, W., 239 Kinoshita, J. H., 310, 682, Kipnis, D. M., 330, 331, 570 Kirby, G. W., 396, 692 Kircher, H. W., 665 Kirkham, W., 407 Kirkland, J. A., 248 Kirkland, R. J. A., 75 Kirkwood, J. G., 154 Kirschfeld, S., 309 Kirshner, N., 233 Kishimoto, Y., 142, 367 Kisliuk, R. L., 212, 224 Kissman, H. M., 107 Kistiakowsky, G. B., 37 Kit, S., 511, 582, 598 Kitabchi, A. E., 398, 416 Kitai, R., 59 Kitos, P. A., 319 Kittler, M., 349, 350 Kitzinger, C., 214, 626 Kiyota, K., 375 Klamerth, O., 486 Kläning, E., 318 Kleczkowski, A., 519 Kleiber, M., 272, 534 Klein, D., 598 Klein, G., 577, 596, 597 Klein, H. P., 284 Klein, L., 66, 67 Kleine, R., 66 Klemer, A., 119 Klenk, E., 115, 131, 136, 144, 261, 280, 380 Kline, D., 372 Kline, E. A., 404 Klingenberg, M., 669-708; 670, 671, 672, 673, 674, 675, 676, 677, 678, 680, 684, 685, 686, 687, 688, 689, 693, 694, 695, 698 Klingmüller, V., 670 Klotz, I. M., 26 Klug, A., 487, 520 Klybas, V., 23, 26, 92, 320, 670

Knapp, A., 425 Knappe, J., 21, 99, 273, 287, 427, 428, 429, 430, Knauff, H. G., 380 Knight, C. A., 456, 458, 459, 469, 477, 478, 479, 484, 485, 518 Knight, J. H., 489, 490 Knight, P. L., 447 Knight, S. G., 265, 308 Knobil, E., 563 Knodt, C. B., 404 Knoll, J. E., 595, 598 Knovalov, N. V., 379 Knovett, V. A., 223 Knowles, R., 208, 442 Knox, W. C., 611 Knox, W. E., 232, 235, 239, 417 Knutson, R. G., 243 Kobayashi, G., 222 Kobayashi, Y., 230 Koch, A. L., 90 Koch, G., 480, 489, 492, 518 Kochetkov, N. K., 202 Kodama, K., 307 Kodama, T., 421 Koelle, G. B., 383 Koelle, W. A., 383 Koenig, H., 367, 513 Koepfli, J. B., 146 Koeppe, O. J., 28, 29, 81 Koeppe, R. E., 213, 217, 276, 681 Koerner, J. F., 495, 513 Kohn, R., 333 Koike, M., 314 Koizumi, H., 194, 217 Koj, A., 225 Kokowski, N., 200 Kolb, A., 112 Kolm, H., 598 Kolor, M. G., 203 Koltun, W. L., 193 Komaki, T., 48 Kon, S. K., 403 Kondo, N., 511 Koneff, A. A., 565 Konig, T., 645 Koningsberger, V. V., 525 Konishi, S., 76 Konovaltschikoff-Mozover, M., 266 Konzett, H., 550, 551 Koo, J., 202 Koon, W. S., 385 Kopala, J., 635, 637, 638 Kopin, I. J., 249 Korey, S. R., 33, 369, 371, 373 Korff, R. W. von, 311 Koritz, S. B., 559 Korn, E. D., 97, 298, 356, 360 Korn, M., 510, 528, 598

Kornberg, A., 75, 77, 83, 373, 425, 494, 495, 504, 513, 584, 594, 597, 670 Kornberg, H. L., 91, 215, 289, 318, 685 Kornberg, S. R., 75, 83, 494, 495, 513, 584 Kornfeld, S., 81 Kortsak, A. S., see Sass-Kortsak, A. Korzenovsky, M., 240, 687 Koshino, C., 218 Koshland, D. E., Jr., 15, 25, 29, 30, 32, 73, 81, 483, 670 Kostyo, J. L., 330 Kosuge, T., 230 Kotake, Y., 235 Kotera, K., 416 Kouba, R., 29 Kovacs, J., 611 Koval, G. J., 98, 145, 681 Kowalsky, A., 29, 81 Kowalsky, A. G., 22 Koyama, J., 351 Kozeff, A., 397, 402 Kozloff, L. M., 475-502; 489, 492, 493, 494, 585, 589 Krahl, M. E., 330, 332, 337 Kramer, E., 483 Krampitz, L. O., 21, 325, Krane, S. M., 645, 646 Kratzer, F. H., 220 Krause, I. M., 160 Krause, L., 589 Krebs, E. G., 21, 25, 30, 89, 670 Krebs, H. A., 223, 679, 681, 685 Kretchmer, N., 232 Kretovich, V. L., 218 Kreutz, F. H., 670, 675, 676 Krim, M., 586 Krimsky, I., 23, 26, 77, 309, 313, 680 Krisch, K., 418, 698 Kroeger, A. V., 484 Kröger, H., 670, 672, 673 Kronenberg, G. H. M., 670, 671 Kröplin-Rueff, L., 91, 263 Krotkov, G., 114 Kruesi, O. R., 198 Kruh, J., 534, 538 Krupka, R. M., 36 Kruse, H. D., 644 Kubišta, V., 677 Kubowitz, F., 670 Kuby, S. A., 31 Kuchinskas, E. J., 226 Kuhn, R., 105, 106, 112, 115, 116, 117, 119 Kuhns, W. J., 617, 618

Kumar, A., 91 Kummerow, F. A., 422 Kun, E., 95, 96 Kunisawa, R., 264 Kunitake, G., 326 Kunkee, R. E., 494 Kunkel, H. G., 611 Kuno, S., 210, 237 Kunst, P., 25, 55, 56 Kupiecki, F. P., 210, 268, 272, 273 Kurahashi, K., 325 Kurek, L. I., 516 Kurtz, E. B., Jr., 287 Kurtz, J. A., 156 Kusui, K., 638 Kuwajima, Y., 230 Kuzemski, J., 401 Kvam, D. C., 335

Lachance, J. P., 283, 681 Lacks, S., 529 Lacour, F., 589 Lacour, J., 589 LaCour, L. F., 508, 512 LaDu, B. N., 232, 417, 418, 681 LaDue, J. S., 242, 243 Lagarrigue, M., 78, 79, 222 Lagerkvist, U., 28 Lagunoff, D., 240 Laidler, K. J., 35, 36, 51 Lajtha, A., 375 Laki, K., 25, 46, 48 Laland, S., 307 Lam, K., 396 Lambert, S., 538 Lambooy, J. P., 447 Lamborg, M., 671 Lameyer, L. D. F., 561 Lamform, H., 536 Lamirande, G. de, 458 Lamison, S. A., 643 Lamond, D. R., 567 Lamprecht, W., 76, 313, 334, 670, 672, 673, 679 Land, H., 202 Landau, B. R., 303, 304, 595 Landeburn, R. H., 55 Landmann, W. A., 557 Landowne, R. A., 649-68; 651, 655, 662, 663 Lands, W. E. M., 49, 144, 145 Landsteiner, K., 144 Lane, B. G., 454, 456, 467, 468, 469 Lane, W. T., 587 Lang, J. H., 51 Lang, K. L., see Linderstrøm-Lang, K. Langan, T. A., Jr., 425, 426

Langdon, R. G., 282, 681, 683 Lange, J., 106 Langely, M., 314, 687 Langer, L., 29, 81 Langer, L. J., 684 Langerbeins, H., 380 Lanz, P., 192 Lapresle, C., 610, 611 Lara, F. J. S., 315 Larbre, F., 378, 379 Lardy, H. A., 16, 17, 85, 136, 138, 139, 240, 269, 327, 449, 674, 678, 681, 696 Lareau, J., 308, 679, 681, 682 Larkin, L., 481 Larner, J., 30, 33, 88, 122, 124, 297, 323, 430, 610 Laroche, M. J., 234 Larsen, L. M., 406 Larson, A. D., 242 Larson, E., 570 Larson, E. R., 331 Larson, F. L., 234 Lasfargues, E. Y., 488, 585 Laskowski, M., 26, 55, 468 Laskowski, M., Jr., 163, 164 Lassen, M., 54 Lassen, N. A., 215 Latarjet, R., 587 Latner, A. L., 440 Latta, M. J., 686 Laudet, P., 558 Lauenstein, K., Lauer, J. W., 249 Lauffer, M. A., 482, 483, 488, 489, 490, 520 488, 489, 490, Laurent, T., 123 Lauryssens, J., 283 Lautsch, W., 183 Lavate, W. V., 441 LaVia, M., 619 Lavik, P. S., 505 Lavras, A. A. C., 67 Law, J., 78 Law, J. H., 131-50; 131, 144, 145, 146, 261 Law, L. W., 577-608; 487, 488, 586, 587, 588, 589, 597, 599 Law, T., 401 Lawler, H. C., 383, 549, Lawley, H. G., 113, 124 Lawley, P. D., 465 Lawrence, N. L., 560, 561 Laws, J. O., 612 Lawson, W. B., 153, 570 Lazo-Wasem, E. A., Leach, S. J., 160, 164 Leadbeater, E. F., 276 Leadbetter, E. R., 266 Leaf, G., 691

Leat, W. M. F., 398, 693 LeBaron, F. N., 131, 141, 143, 144, 365, 368, 374 LeClerc, J., 486 Lecoq, R., 217 Leddicotte, G. W., 393 Leder, 1. G., 98 Lederberg, J., 581, 584, Lederer, E., 112, 113, 120, 131, 134, 135, 141, 146, 147 Lederis, K., 549 Ledieu, M., 171 Ledig, M., 510 Le-Dizet, L., 106, 119 Leduc, E. H., 613, 617, 618 Lee, K. Y., 509 Lee, M. N., 212 Lee, S., 587 Lee, T. H., 553, 554 Lee, W., 56 Lee, Y. P., 89, 678 Leeman, L., 512 Leemreis, W., 556 Leeper, L. C., 246 Lees, M., 366, 367, 368 Lees, M. B., 140 Legault-Démare, J., 567 Legler, G., 67 Lehman, I. R., 83, 397, 459, 504, 597, 692 Lehninger, A. L., 34, 323, 414, 415, 679, 681, 696, 697 Leibman, K. C., 527 Leibowitz, Y., 122 Leichsenring, J. M., 643 Leidy, G., 455 Leiner, K. Y., 379 Leise, J. M., 617 Leitenberg, M., 426 Leitz, E. W., see Waldschmidt-Leitz, E. Leloir, L. F., 77, 88, 89, 116, 120, 297, 300, 302 Lembeck, F., 248 Lemieux, R. U., 115, 116, 132, 133 Lemoigne, M., 263 Lempfrid, H., 115 Lenci, M. T., 197, 549 Lenhard, R. E., Jr., 670, 681 Lennartz, H., 670 Lennox, E., 538, 539 Lennox, E. S., 624 Lenormant, H., 160 Leonard, S. A., 246 Leonard, S. L., 338 Leone, E., 426 Leong, P. C., 643 Leonhäuser, S., 681, 698 Léonis, J., 171, 173, 557 Leonora, J., 565 LePage, G. A., 591, 594,

595, 599, 600 Lepkovsky, S., 236, 565 Lerman, L. S., 504, 615 Lerner, A. B., 553, 554, 556 Lerner, B., 365 Leroy, J., 644 Lester, G., 330 Lester, R. L., 396, 398, 399, 674, 686, 691, 692, 693, 694 Letters, R., 348, 349 Lev. M., 403 Levenberg, B., 231, 233, 426, 599, 681 Levenbook, L., 513 Levene, C. I., 247 Leverton, R. M., 244 Levin, D. H., 92, 321 Levin, F. Y., 233 Levin, H. W., 569 Levin, Y., 64, 172 Levine, L., 170, 489, 490, 507, 629 Levine, R., 304 Levine, V. E., 422 Levine, W. G., 46 Levinson, Z. H., 282 Levinthal, C., 489, 490 Levinthal, J. D., 588 Levitz, M., 245, 376 Levy, A. H., 595 Levy, H. B., 589 Levy, H. M., 29 Levy, H. R., 78, 670, 679 Levy, M., 162, 220, 305 Lewbart, M. L., 353, 355 Lewin, L. M., 431 Lewis, B. A., 107, 110 Lewis, C., 595 Lewis, J. I. M., 359 Lewis, J. W. C., see Clark-Lewis, J. W. Lewis, M. R., 580 Lewis, R. H., 243 Lewis, S. E., 674 Lewis, U. J., 47, 562 Lewis, W. R., 406 Lewycka, C., 353, 355 Ley, J. de, 121, 321, 322, 324 Lezius, A., 351 L'Heureux, M. V., 64 Li, C. H., 183, 188, 197, 198, 199, 553, 554, 555, 556, 557, 561, 562, 563, 564, 565, 566 Liberti, A., 659 Lichstein, H. C., 429 Lichtenstein, J., 494, 495, 513, 584 Lichtenstein, N., 214 Liddle, A. M., 124 Lieberman, I., 29, 590, 591, 593, 594, 670 Lieberman, M., 588 Lieberman, S., 611

Liebert, E., 383 Liebrecht, E. M., 366 Liener, I. E., 57 Lifson, U., 269 Light, A., 62, 171, 197, 548, 549 Lightbrown, J. W., 690 Lima-de-Faria, A., 509 Lin, E. C. C., 232, 239 Lind, Kh., 215 Lind, P. E., 481, 486, 520 Lindahl, K. M., 230 Lindan, O., 394 Lindberg, O., 697 Linde, S., 243 Lindell, S. E., 230 Lindeman, J., 486 Linderstrøm-Lang, 151, 152, 156, 160, 161, 165, 166, 174, 178, 457 Lindgren, B. O., 119 Lindner, A., 595, 597 Ling, K. H., 678 Linn, B. O., 398, 399, 693 Linn, R. H., 243 Linnane, A. W., 670, 689, 695 Linzen, B., 238 Lipman, V., 372 Lipmann, F., 28, 88, 97, 273, 297, 325, 347, 348, 349, 350, 353, 354, 355, 356, 525, 526, 527, 529 Lippincott, B. B., 32 Lippold, G., 666 Lipscomb, H. S., 203, 548, 549, 558 Lipsky, S. R., 649-68; 651. 655, 657, 662, 663 Liss, E., 581 List, P. H., 226, 229, 463 Litman, R. M., 507, 515, Litt, M., 478 Littlefield, J. W., 460, 463, 510, 528 Litwin, J., 475 Liu, K. 202 Liwschitz, Y., 202 Lloyd, A. G., 117, 360 Lloyd, B. J., 587 Lloyd, J. B., 595 Lockart, R. Z., Jr., 520 Loeb, M. R., 495 Loening, U. E., 568, 672, 673 Loewenstein, W. R., 383 Loewus, F. A., 323, 416, 417 Loftfield, R. B., 529, 536 Logan, J. B., 480, 482 Logan, K. R. H., see Henery-Logan, K. R. Loh, P. C., 520 Lohmann, K., 589 Löhr, G. W., 670, 671

Loken, M. K., 64 LoMonte, A., 29 London, M., 23 Long, C., 367, 369 Long, R. W., 263, 284, 286 Longenecker, H. E., 416 Longinotti, L., 310, 329 Loo, T. L., 591 Loosli, J. K., 352, 406 Lopez, E., 569 Lorber, V., 269 Lorch, E., 21, 99, 287, 427, 428, 429, 430 Lorch, L., 273 Lorenz, F. W., 404 Loring, H. S., 477, 478 Lorini, M., 315 Losse, G., 191 Lostroh, A. J., 565 Lotspeich, W. D., 313 Loud, A. V., 681 Loughridge, L., 250 Louis, C J., 581 Louis, P., 438 Loutit, P. L. T., 622 Love, R., 586, 587 Loveless, A., 516, 517 Loveless, L. E., 235 Loveless, M. H., 618 Lovelock, J. E., 280, 653, 655, 657, 660 Löw, H., 697 Lowe, A. E., 658 Lowe, C. V., 512 Lowe, I. P., 352 Lowe, K. G., 248 Lowenstein, J. M., 224 Lowenthal, A., 374, 380 Lowry, O. H., 379, 670, 671, 672, 673 Lowther, D. A., 226 Luber, K., 145 Lucarain, C., 553 Lucas, J. M. S., 445 Lucas, N., 423 Luchsinger, W. W., 28, 29, 81 Luck, J. M., 30, 512 Luckey, T. D., 394, 400, 403 Lüderitz, O., 113, 135, 146 Ludoweig, J., 114 Ludwig, M. I., 396, 402 Ludwig, M. L., 193, 229 Luebering, J., 81 Luescher, E., 615 Luft, A. M., 380 Lugg, J. W. H., 347 Luhby, A. L., 445, 618 Lukens, F. D. W., 338 Lukens, L. N., 79, 590, 591 Lukton, A., 221 Lund, P., 318 Lundback, K., 335 Lundeen, A. J., 361

Lundquist, F., 318, 670 Luria, S. E., 489, 490, 541, 584 Lusi, A., 186 Lute, M., 489, 492, 493 Lüth, H., 319, 331 Luther, H. G., 403, 404 Lutz, W. B., 201, 550 Luukkainen, I. T. T., see Takki-Luukkainen, I. T. Lwoff, A., 475, 584 Lygren, T., 379 Lynch, B. M., 465 Lynch, G. P., 406 Lynen, F., 21, 78, 91, 98, 99, 262, 263, 273, 274, 283, 285, 286, 287, 352, 427, 428, 429, 430, 675, 681 Lynn, W. S., 280 Lyon, I., 284, 289 Lyras, C., 323

# M

Maalee, O., 496, 506 Maas, W. K., 28, 538, 542 Maassab, H. F., 480, 481, 518 Mabin, W., 570 McArdle, A. H., 504 McArdle, B., 385 McArthur, J. W., 566 McCalla, D. R., 231 McCance, R. A., 214, 644 McCann, S. M., 236, 558, 564 McCann, W. P., 263 McCarthy, E. A., 353 McCay, P. B., 398, 416 McClintock, B., 578 McCluer, R. H., 135 McClure, F. T., 532, 533 McCollister, R., 645 McCollum, E. V., 644 McComb, R. B., 312 McConnell, K. P., 394. 395, 396 McConnell, W. B., 123, 208, 296 McCormick, D. B., 420 McCorquodale, D. J., 530 McCoy, E., 400 McCoy, E. E., 30, 33 McCulloch, E. A., 586, 588 McCullough, W. G., 282 McDonald, C. E., 52 Macdonald, C. G., 136 MacDonald, D. L., 139 McDonald, I. J., 67 MacDonald, M. R., 456 McDonald, R. J., 558 McDonald, T. R. R., 159 McDonough, M. W., 319 McDougall, E. I., 378 MacDougall, M., 107

McDowell, R. E., 404 McElroy, O. E., 232 McElroy, W. D., 97, 352, 355 McEntegard, M. G., 617 McEvoy, D., 446 McEvoy, F. J., 107 McEwen, B., 217 McFadden, B. A., 326 MacFadyen, D. A., 107 McFall, E., 506, 537 McFarlane, A. S., 611, 613, 619 Macfarlane, M. G., 366 McGarrahan, K., 681 McGavin, S., 177 McGeachin, R. L., 302 McGilvery, R. W., 347, 354 McGinn, C. J., 106, 112 McGinnis, J., 405 McGregor, R. M., 198, 553 McGuire, F. L., 246 Macheboeuf, M., 619 Machlin, L. J., 352, 401 McHugh, R., 23 McIlwain, H., 309, 375 McInnes, A. G., 665 MacIntyre, I., 635-48; 642, 643, 644, 645, 646 McIsaac, R. J., 383 McIsaac, W. M., 240, 248 Mack, R., 564 Mackay, C. F., 658 McKee, R. W., 312 McKenna, J. M., 622 Mackenzie, D. Y., 245, 376 McKenzie, J. M., 561 McKerns, K. W., 339 McKhann, G. M., 215, 216 McKibbin, J. M., 136 McKibbin, J. M. Mackinney, G., 221 McKinney, L. L., 202 Mackinnon, N. L., 439 Mackler, B., 686, 698 Macklin, L. J., 407 Maclachlan, G. A., 296 McLaren, L. C., 480, 482, 487 MacLean, E. C., 491 McLean, P., 318, 319, 329, 570, 671, 672, 673, 675, 679, 681, 683 McLennan, H., 215, 217 MacLeod, J., 313 McMaster, M., 629 McMaster, P., 614 McMaster-Kaye, R., 512 McMullan, H. W., 404 McMullen, F. F., 248 McMurray, W. C., 373, 449, 696 McOsker, D. E., 383, 440 McPherson, C. F., 372 Macpherson, H. T., 218 McPherson, J. F., 398,

McQuate, J. T., 77, 680, MacRae, T. P., 162 McRorie, R. A., 321, 322 McShan, W. H., 282, 565, 670, 671 MacWilliam, I. C., 119 McWilliam, 1. G., 654 Maddy, K. H., 407 Madison, L. L., 335 Madsen, N. B., 89, 290, 318 Maetz, J., 553 Magasanik, A. K., 540 Magasanik, B., 87, 136, 468, 495, 540 Magee, M., 372 Magee, W. L., 372 Magoun, H. W., 215 Magrath, D. I., 194, 208, Magruder, N. D., 404 Maguire, M. H., 591, 595 Mahan, P. E., 643 Mahler, H. R., 261, 476, 490, 491, 698 Mahler, R., 332, 333 Mahowald, T. A., 31 Maimind, V. J., 114 Main, J. M., 580 Mairesse, N., 593, 598 Makinodan, T., 622 Makisumi, S., 199 Malcolm, B. R., 159, 171 Maley, F., 75, 85, 116 Maley, G. F., 116, 446, 674 Malison, J. R., 686 Malkin, A., 282 Malkin, T., 139, 144 Mallein, R., 378, 379 Malmstadt, H. V., 642 Malmstrom, B. G., 32 Malpress, F. H., 300 Maltaner, F., 629 Mamoon, A. M., 681, 683 Man, E. B., 570 Manaso, M. G., see Grunberg-Manaso, M. Manchester, K. L., 337, 570 Manchon, P., 234 Mandel, H. G., 454, 589 591, 592, 593, 595, 598, Mandel, P., 510 Mandelbaum, F. J., 67 Mandels, M., 302 Mandelstam, P., 75, 114, 144, 371, 372 Mandema, E., 438 Mandl, I., 66 Manegold, J. H., 228 Mangold, H. K., 282 Mann, G. V., 638, 639 Mann, T., 306 Manners, D. J., 105, 110,

121, 123, 124, 302 Manning, D., 57 Manning, D. T., 49, 202 Mano, Y., 322, 415, 681 Manson, D., 353, 354, 359 Mansour, T. E., 240, 305, 670, 671 Mantica, E., 113 Mantsavinos, R., 504, 505 Manzo, E. Y., see Yatco-Manzo, E. Mapson, L. W., 323, 416, 417 Marano, B. J., 598 Marchant, J., 584 Marcotte, J. M., 586 Marcus, A., 28, 78, 79, 91 Marcus, F., 222 Marcy, R., 566, 567 Mardashev, S. R., 223 Margoliash, E., 691 Marinetti, G. V., 141, 143, 366, 486 Marini, M. A., 52 Markel, S., 244 Markert, C. L., 513, 669, 670 Markham, R., 454, 469, 591 Märki, F., 691 Markovetz, A. J., 242 Markovitz, A., 299 Marks, I. N., 646 Marks, P. A., 304, 320, Marks, R., 616 Markus, G., 157, 158 Marmur, J., 459, 509 Marples, E. A., 385 Marqueville, J., 627 Marrack, J. R., 609, 626 Marré, E., 418 Marsden, S. J., 405 Marsh, G. E., 467 Marsh, J. M., 120 Marsh, M. M., 157, 158 Marshall, J. D., 617 Marshall, L. D. 284 Marshall, M., 16, 80, 223 Marston, H. R., 268 Martell, A. E., 423 Martin, A. J. P., 649, 650, 663 Martin, A. P., 690 Martin, C J., 49, 52, 66 Martin, D. B., 332, 570 Martin, D. S., 427 Martin, F. B., 143 Martin, G. J., 202 Martin, H. E., 645 Martin, J. K., 271 Martin, R. B., 50, 51, 53 Martin, R. O., 28, 91, 267 Martin, R. V., 296 Martin, S. M., 319 Martinez, R. J., 312

Martini, L., 563 Martinson, E., 125 Martius, C., 398, 691 Marvin, D. A., 503 Marvin, J. F., 64 Marx, A. F., 191 Marx, W., 97, 356 Masaki, S., 610 Masayama, T., 235 Mascitelli-Coriandoli, E., 392 Masi, I., 304, 310, 316, 317, 329, 331, 333 Mason, H. S., 681 Mason, L. H., 135, 143, 658 Mason, M., 237 Mason, S. F., 464, 466 Masoro, E. J., 266, 267 Masouredis, S. P., 611, 614 Masri, M. S., 289 Massani, Z. M., 203 Massart, L., 29 Massey, V., 314, 687 Matikkala, E. J., 194 Matsubara, H., 25, 48, 57 Matsuda, K., 118 Matsui, T., 230 Matsumara, Y., 236 Matsuo, Y., 21, 225 Matsuura, T., 193, 235 Mattern, C. F. T., 480 Matterson, L. D., 397, 402, 406 Matthes, K. J., 684 Matthews, C., 613 Matthews, R. E. F., 454, 462, 510, 515, 519, 520, 528, 589, 592, 597, 598 Matusumoto, Y., 214 Matzelt, D., 670 Maudgal, R. K., 27 Maurer, P. H., 610, 619, 620, 622, 629 Mauritzen, C. E., 512 Maurukas, J., 147 Maury P., 111 Maver, M. E., 458 Mavrodineanu, R., 642 Maw, G. A., 93, 347 Maxwell, E. S., 74, 116, 413, 681 Maybury, R., 54 Maybury, R. H., 158 Mayer, F. C., 30, 33, 122 Mayer, J., 338 Mayer, M. M., 609, 629 Mayfield, O. J., 400 Mazina, N. M., 581 Mazina, N. M., 581 Mazurenko, N. P., 583 Mead, G. G., 199 Mead, J. F., 278, 280, 281, 661, 664 Meadow, P., 219, 220 Meadows, G. B., 400 Mechanic, G. L., 220

Medawar, P. B., 579, 622, 623 Medina, D., 586 Mee, L. K., 563 Meedom, B., 48, 54, 55 Meeuse, B. J. D., 275 Mehl, J. W., 645 Mehler, A. H., 31 Mehltretter, C. L., 110 Mehta, R., 212, 441, 530 Meilman, E., 66, 67, 177 Meisky, K. A., 407 Meister, A., 17, 18, 83, 84, 183, 229, 245, 526, 669 Melby, J. C., 243, 645 Melcher, L. R., 611, 614 Melius, P., 406 Mell, G. P., 95 Mellinkoff, S. M., 244 Melnick, J. L., 487 Melnykovych, G., 223 Meloun, B., 56 Melville, D. B., 229 Melville, T. H., 359 Ménard-Jeker, D., 20 Mendel, L. B., 643 Mendoza, H. C., see Castro-Mendoza, H. Menendez, E. B., see Braun-Menendez, E. Meniga, A., 568 Menkes, J. H., 245 Menozzi, P., 330 Menssen, H. G., 229 Mercer, E. H., 496, 628 Merlis, J. K., 249 Merrick, J. M., 107 Merrill, J. P., 622 Merrill, S. M., 528 Merritt, A. D., 670 Mertz, W., 391 Mervyn, L., 399 Merz, H., 202 Mescon, H., 556 Meselson, M., 505, 506, 509 Meshkova, N. P., 229 Messen, S., 511 Metais, P., 636, 638 Metcalf, D., 584, 589 Metcalfe, L. D., 202 Metzenberg, R. L., 16, 80, Metzler, D. E., 448 Meulengracht, E., 438 Meussen, H. G., 463 Meyer, A. C., 377 Meyer, B. J., 377 Meyer, L. N., 439 Meyer, R. K., 565 Meyer, W. D., 371 Meyerhof, O., 77 Meynell, M. J., 441 Meynier, D., 217 Mialhe, P., 570 Mialhe-Voloss, C., 558

Michael, M. E., 591 Michael, O., 235 Michaelis, F., 636 Michales, S., 66, 177 Michalski, J., 562 Micheel, F., 111, 190 Michel, O., 353 Michel, R., 234, 353 Michelson, A. M., 454, 455, 456, 458, 461, 468 Michon, J., 567 Mickelsen, O., 427 Micou, J., 511 Mider, G. B., 586 Miekeley, A., 152 Mihailovic, M. Lj., 195 Mihalyi, E., 460 Mikes, O., 56, 199 Mikulska, Z. B., 579 Milan, H. P., see Perez-Milan, H. Miles, H. T., 446 Milewski, B., 553 Milhaud, G., 492 Milhorat, A. L., 396 Milia, A. D., 526 Millar, D. B. S., 670, 671 Mille, A. P., see Pedrini-Mille, A. Miller, A., 93, 440 Miller, C. S., 21, 448 Miller, E. C., 577, 582, 584, 589 Miller, G. E., 263 Miller, I. F., 439 Miller, I. M., 438 Miller, J. A., 135, 577, 582, 584, 589 Miller, J. P., 282, 289 Miller, K. D., 46, 47 Miller, L. L., 336 Miller, O. N., 438, 670 Miller, O. P., 377 Miller, P., 614 Miller, R. W., 591 Miller, S., 245, 376 Miller, W. G., 29, 34, 80 Millerd, A., 314 Mills, G. C., 681 Mills, G. L., 67 Mills, G. T., 85 Mills, R. C., 18, 34 Milne, M. D., 249, 250 Miloslavskaia, L. I., 214 Milstone, J. H., 55 Milstrey, R., 391 Miner, J. J., 405 Minesita, T., 416 Minibeck, H., 636, 637, 638 Minnaert, K., 690 Minthorn, M. L., Jr., 208 Minz, B., 552 Minzly, Y. H., see Herzberg-Minzly, Y. Miramon, A., 287 Mirand, E. A., 583, 586, 589

Mirbach, H., 467, 468 Mirsky, A. E., 510 Mirsky, I. A., 569 Mitchell, R. H., 393 Mitchison, N. A., 621 Mitoma, C., 207-60; 217, 222, 227, 228, 231, 239, 245, 247, 419 Mitra, A. K., 123, 296 Mitsuhashi, S., 351 Mitz, M. A., 46 Miura, K., 496 Miwa, T., 89 Miyagawa, I., 32 Miyaki, K., 208, 214 Miyazaki, M., 455, 456, 457 Mizunuma, T., 67 Moat, A. G., 429 Moberly, M. L., 486 Mocksi, H., 262 Moffatt, J. G., 448 Moffitt, W., 154 Mohammed, C. I., 419 Mohler, B. A., 319 Moldave, K., 17, 84, 245, 526, 530 Mole, R. H., 577 Molinari, R., 698 Moline, S. W., 237, 424 Molins, D., 383 Moliterno, F., 319, 682 Møller, F., 513, 669, 670 Mollin, D. L., 439 Mologne, L. A., 97, 232, 353, 354 Moloney, J. B., 487, 585. 589 Moltz, A., 415 Monder, C., 234 Mondovi, B., 226 Money, W. L., 561 Monod, J., 537, 538, 539, 540, 541, 542 Montag, B. J., 595 Montag, W., 280 Montague, M. D., 595 Montesi, G., 315 Montgomery, E. M., 121 Montgomery, J. A., 589, 591 595, 598, 599, 601 Montgomery, R., 39, 108 Monty, K. J., 22, 371 Montz, K. J., 268 Moore, B. W., 313 Moore, D., 658 Moore, D. H., 488, 585 Moore, E. C., 594 Moore, G. E., 586 Moore, K. B., 692 Moore, L. A., 405 Moore, R. O., 564 Moore, S., 26, 151, 167, 168, 169, 170, 174, 354, 456 Mora, P. T., 111 Morehouse, N. F., 400

Morel, C. J., 116 Morel, F., 553 Morell, A. G., 377 Moret, V., 315, 320 Morgan, H. R., 486 Morgan, J. F., 214 Morgan, K., 119 Morgan, R. S., 369, 370 Morgan, W. T. J., 609, 610 Mori, A., 215 Mori, R., 64 Morita, K., 49 Morita, T., 526 Morozova, E. A., 191 Morre, P. R., 400 Morrill, G. A., 458 Morris, C. E., 381 Morris, C. J., 199, 226 Morris, D., 406, 407 Morrison, D. C., 202 Morrison, J. F., 77, 222 Morrison, J. L., 618 Morrison, L. R., 371, 385 Morrison, M., 397, 690, Morrison, R. D., 404 Mortlock, R. P., 325 Morton, J. M., 677 Morton, M. E., 561 Morton, R. A., 398, 399, 692, 693, 694 Morton, R. K., 301 Mosbach, E. H., 636, 638 Mosbach, R., 32 Moscatelli, E., 143, 145 Moscatelli, E. A., 323, 430, 661 Moser, H., 143 Moser, H. W., 371 Moses, V., 327, 328, 329 Moshi, R., 111 Moskowitz, N., 561 Möslein, E. M., 78, 98 Mosser, D. G., 64 Mould, D. L., 296 Moulton, R., 643 Mount, D. T., 583, 586, 589 Mountain, I. M., 480, 518 Mounter, L. A., 48, 57 Mourkides, G. A., 208, 236, Moustacchi, E., 587 Moxon, A. L., 221, 391 Moyed, H. S., 87, 594 Moyer, A., 612 Moyer, A. W., 518 Moyer, J. D., 110, 114 Moyle, J., 16 Mozoyer, M. K., see Konovaltschikoff-Mozoyer, Mudd, S. G., 146 Mudd, S. H., 16, 224, 225 Mueller, G. C., 520 Mueller, J. M., 185 Mueller, K. L., 144, 145

Muić, N., 568 Mukherjee, K. L., 595, 597 Mukherjee, S. L., 437 Mulcare, D., 244 Mulgaonkar, A. G., 439 Mulligan, W., 612 Mulzoe, C., 439 Munch-Petersen, A., 297 Munday, K. A., 556 Mundry, K. W., 478, 515, 518 Munier, R., 526, 533, 534 Munsick, R. A., 552 Muntz, J. A., 682 Munyon, I. L., 199 Murachi, T., 63 Murakami, E., 636 Murakami, M., 186 Murakami, S., 441 Murakami, W. T., 224, 507 Murayama, M., 175 Murley, W. R., 404 Murphy, J. R., 682 Murray, M. R., 488, 585 Musil, V., 202 Mussgay, M., 480, 487, Muth, O. H., 393 Muzard, J., 234 Mycek, M. J., 61 Myer, A. W., 480, 481 Myers, D. K., 384, 674, 684 Myers, F., 681 Mylius, F., 635

# N

Nachmansohn, D., 365 Nadai, Y., 222 Nadgornaya, N. I., 583 Naftalin, J. M., 394 Nagai, Y., 66, 177, 351 Nagasawa, M., 67 Nagashima, A., 218 Nagle, R., 272 Nairn, R. C., 617 Najjar, V. A., 30, 33, 621, 670 Nakada, H. I., 275, 324, 331 Nakai, M., 23, 48 Nakamura, E., 111 Nakamura, K., 52 Nakamura, S., 89 Nakano, M., 234 Nakao, M., 75 Nakata, Y., 321 Nakatomoto, T., 670 Nakatsu, S., 50 Nakayama, T., 131, 144, 145, 146 Nakayama, T. O. M., 221 Namba, S., 421 Nanney, D. L., 578 Naono, S., 539, 540

Naora, H., 510 Narahara, H. T., 568, 569 Narahishi, Y., 67 Narita, K., 153, 483, 554 Narrod, S. A., 426 Nason, A., 397, 692 Nath, M. C., 448 Nathan, H. A., 440 Naughton, M. A., 25, 46, 47, 48, 53, 57 Navazio, F., 670, 684, 687 Nayler, J. H. C., 200 Necheles, H., 570 Neelin, J. M., 512 Neely, W. B., 90, 301 Negishi, T., 143 Neidhardt, F. C., 540 Neidle, A., 228 Neilands, J. B., 669 Neill, D. W., 379 Neish, A. C., 231 Nelson, R. A., 629 Nelson, T. S., 393 Neptune, E. M., Jr., 298 Nes, K. E., see Eik-Nes, K. Nesbett, F. B., 337 Nesheim, M. C., 394, 395 Nesvadba, H., 552 Neter, E., 146 Nettleton, D. E., Jr., 201, 550 Neubauer, C., 635 Neuberg, C., 360, 361 Neuberger, A., 162, 164 Neufeld, E. F., 76, 84, 85, 89, 113, 299, 300, 302, 680, 684 Neuhaus, F. C., 84, 208, 209 Neumann, H., 64 Neumayer, E., 385 Neurath, H., 25, 45, 46, 47, 52, 53, 54, 55, 56, 57, 58, 63, 64, 152, 172 Nevell, T. P., 106, 107 Neveu, M. C., 38 Nevo, A., 629 Newberne, P. M., 440 Newburgh, R. W., 67, 319 Newman, M. J. D., 243 Newmark, P., 513 Newth, F. H., 105, 111 Newton, A., 487 Newton, A. A., 506 Nezlin, R. S., 616 Nguyen Chi, J. P., 233, 241 Nichol, C. A., 242, 591, 598, 681 Nicholas, A., 378, 379 Nicholas, D. R., 437 Nicholas, H. J., 370 Nicholls, J. D., 56, 58 Nichols, B., 558 Nicholson, W. H., 111,

113

Nickon, A., 692 Nicol, D. S. H. W., 568, 569 Nielsen, A. T., 552 Nielsen, K., 335 Nielsen, R. L., 335 Nielson, G. K., 393, 396, 397 Niemann, C., 36, 48, 49, 50, 51, 53, 146, 202 Nieweg, H. O., 438, 439 Nigam, V. N., 320 Niggemeyer, W. F., see Frisch-Niggemeyer, W. Nikkila, E. A., 249, 670 Nilsson, K., 240 Nishi, K., 561 Nishida, K., 329 Nishihara, T., 177 Nishimura, S., 48 Nishinuma, K., 194, 217 Nishizawa, Y., 421 Nishizuka, Y., 95, 210 Nisizawa, K., 105, 116 Nisman, B., 526, 532 Nisonoff, A., 616, 626, 627, 628 Nisselbaum, J. S., 670, 671 Niu, C., 484 Niwa, M., 230 Nizet, A., 538 Noall, M. W., 570 Noble, E. P., 317 Noda, H., 66, 177 Noda, L., 36 Nodes, J. T., 458 Noe, F. F., 194 Noguchi, K., 415 Nohara, M., 526 Nojima, S., 142 Nolan, H., 684 Noll, H., 134 Nomoto, M., 67 Norberg, R. E., 32 Nordin, P., 122 Nordlie, R. C., 36, 93, Norman, D., 330 Norman, N., 125 Norris, L. C., 393 Norris, L. M., 643 North, A. C. T., 177 Northover, J., 570 Norton, P. M., 244 Norton, W. T., 366 Nose, Y., 97, 355, 477 Nossal, G. J. V., 624 Notton, B. M., 315 Novelli, G. D., 81, 322, 525, 526 Noverraz, M., 638 Novoa, W. B., 36, 670, 671 Nowotny, A., 146 Nozaki, M., 23 Nuenke, B. J., 670

Nunez, J., 234 Nunnikhoven, R., 691 Nutting, M. D. F., 24 Nyberg, W., 439 Nye, J. F., 209 Nygaard, O. F., 505 Nylick, I., 243 Nystrom, R. F., 143 Nytch, P. D., 240

0

Oakley, C. L., 615 Oates, J. A., 239 Oberst, F. W., 385 Oboshi, S., 601 O'Brien, B. R. A., 593 O'Brien, J. R. P., 447 O'Brien, R. D., 681 Ochoa, S., 16, 27, 33, 75, 77, 80, 82, 99, 262, 267, 268, 269, 429, 531, 670 O'Connell, P. W., 145 Oda, T., 145 O'Dell, B. L., 440 Odin, L., 115 O'Donnell, J. J., 124 O'Donnell, V. J., 282 Oesper, P., 77 Ofengand, E. J., 525, 527, 528 Ogata, K., 526 Ogg, C. L., 663 Ogilvie, J. W., Jr., 279 Ohara, K., 194, 217 O'Herron, F. A., 115 Ohlson, M. A., 449 Ohmura, E., 275 Ohno, S., 586 Ohrt, J. M., 512 Ojamãe, M., 30 Okamoto, K., 307 Okamoto, T., 39 O'Kane, D. J., 325 Okuda, K., 441 Okuda, T., 186 Okumura, N., 216, 219 Okunuki, K., 23, 48, 690 Okuyama, T., 119 Olavarría, J. M., 77, 88, 297 Oldementel, H. A., 243 Oldfield, J. E., 393, 406 Oldham, K. G., 241 O'Leary, J. F., 385 Olenicheva, L. S., 243 Olitzky, A. L., 611 Olley, J., 136 Olson, J. A., 207, 317, 318, 680 Olson, M. E., 536 Olson, R. E., 392, 394, 395, 396, 398 Olson, V. H., 618 Omata, R. R., 449 O'Meara, D., 110 Omura, T., 351

Oncley, J. L., 566 O'Neil, J. J., 696 O'Neill, A. N., 119 Ono, M., 119 Ooms, A. J. J., 56 Oosterbaan, R. A., 25, 52, 55, 56, 57 Opton, E. M., 487 Orange, M., 642 Oravec, C., 626 Orchen, M., 369, 371 Orekhovich, V. N., 177, 210 Orent, E. R., 644 Orgel, L. E., 38 Orlans, E., 487 Orlowski, S., 421 Orr, C. H., 651 Orr, J. W., 584 Orr, S. F. D., 353, 354 Orrell, S. A., Jr., 123 Orris, L., 611 Ortanderl, F., 669, 671 Orten, J. M., 207 Ortiz, L. O., 440 Ortiz, P. J., 82 Osawa, S., 463, 510, 511, 593 Osborn, E. C., 636, 637, 638, 639 Osborn, M. J., 21, 80, 443, 598, 681 Osborne, G. D., 147 Osdene, T. S., 202 Ostenhof, O. H., see Hoffmann-Ostenhof, O. Östergren, G., 586 Osteux, R., 222 Otaka, A., 463 Otaka, E., 510 Otani, T. T., 188 Otsuji, N., 595 Otsuki, S., 216, 219 Ott, P., 670 Ottaway, J. H., 199, 562 Otterbach, H., 117 Ottesen, M., 46, 48, 54, 161, 163, 170 Ottinger, B., 622 Ottolenghi, P., 36, 282 Otvos, J. W., 653 Oucherlony, O., 615 Ouchi, S., 226 Oudin, J., 614 Ouellet, L., 52 Ovary, Z., 618 Ove, P., 590, 591, 593, 594, 670 Overbeek, J. T. G., 525 Overberger, C. G., 186 Overend, W. G., 105, 107 Overrath, P., 681 Owen, O., 112, 113 Oyama, J., 332, 623 Ozaki, M., 234 Ozola, J. G., 80

p

Pace, M. G., 427 Pace, N., 670, 678 Packa, W. L., 240 Packer, L., 217, 678, 687, 695 Paerels, G. B., 115 Page, A. C., Jr., 399 Page, I. H., 240, 248 Pahl, H. B., 511 Painter, E. P., 394 Painter, J. C., 585 Pairent, F. W., 64 Paiva, A. C. M., 62, 171 Paladini, A. C., 203 Palasi, C. V., see Villar-Palasi, C. Palmstierna, H., 123 Pamakcu, A. M., 250 Pangborn, M., 142 Panijel, J., 492 Panneman, H. J., 191, 198 Panos, C., 282 Paoletti, P., 282 Paoletti, R., 374 Papadopoulos, N., 323, 379, 430, 681 Papkoff, H., 561, 562, 563 Papp, M., 243 Pappenheimer, A. M., Jr., 427, 617, 618, 620 Paraf, A., 623 Parcells, A. J., 562 Pardee, A. B., 76, 210, 494, 506, 507, 509, 515, 534, 537, 539, 540, 541, 542 Pare, C. M. D., 246 Park, C. R., 569 Park, J. H., 670 Park, J. T., 403 Parker, F. M., 379 Parker, M. J., 26, 59, Parker, M. J., 60, 61, 62, 172 Parks, R. E., Jr., 335, 590, 591, 593, 594, 595 Parmelee, E. T., 439 Parrish, F. W., 110 Parsons, D. W., 559 Parvé, E. P. S., see Steyn-Parvé, E. P. Pascoe, T. A., 635 Pasher, I., 440, 447 Pasieka, A. E., 214 Passonneau, J. V., 32 Pasternak, C. A., 348, 353, 354, 595 Patchett, A. A., 228 Patchornik, A., 153, 570 Patel, D. S., 299 Paterson, A. R. P., 590, 594 Patras, B., 620 Patrick, R. W., 558 Patterson, E. L., 391, 392, 393 Patterson, J. D. E., 368

Patterson, M. K., Jr., 670 Patterson, R. L., 407 Paul, J., 505 Paul. R., 189 Pauling, L., 38, 154, 618 Paulsen, C. A., 565 Paulsen, H., 195 Paulus, H., 86, 140, 431 Pavan, M., 113 Payling Wright, G., 369, 370 Payne, F. E., 487, 520 Payne, K. E., 670 Payne, W. J., 321, 322 Paynter, K. J., 419 Pazur, J. H., 120, 122, 302 Peacocke, A. R., 466, 467 Peanasky, R. O., 16 Pearse, A. G. E., 644, 646 Pearson, H. E., 224 Pearson, J. A., 314 Pearson, L. O., 586, 587 Pearson, P. B., 238, 352 Peat, S., 90, 110, 112, 113, 120, 121, 122, 123, 124, 125, 295 Pechère, J. F., 45, 46, 54, 55, 172 Pechet, L., 46, 48, 55 Peck, H., 350 Pedrini, V., 248 Pedrini-Mille, A., 248 Peirce, W. H., 35, 36 Pelc, S. R., 508, 512 Pellegrini, L., 392 Pellegrino, D. N., 300 Peller, L., 35, 37, 154 Pelter, A., 27 Penagos, S. P., 267 Pencharz, R., 236 Penefsky, H., 696 Penn, N., 629, 698 Pennel, R. B., 566 Pennington, R. J., 271, 325 Pennock, J. F., 398, 693 Pepe, F. A., 626 Percival, E., 113, 124 Perez, A. G., 595 Perez-Milan, H., 352 Perisutti, G., 569 Perlin, A. S., 114, 121, 123, 296 Perlmann, G. E., 151-82; 64, 155, 158, 162, 164, 173, 174 Perlzweig, W. A., 422, 638 Perman, V., 402 Peron, F. G., 559 Perri, G. C., 202 Perrin, D., 538, 539 Perrone, J. C., 202 Perry, B., 486 Perry, T. W., 400, 404 Perry, W. F., 282 Perske, W. F., 335

Persson, N., 552 Pertseva, M. N., 214 Perutz, M. F., 166 Pesch, L. A., 338 Petek, F., 120 Peter, G., 193 Peterkofsky, B., 96, 219 Petermann, M. L., 536, 563 Peters, H. A., 250 Peters, J. M., 444, 681 Peters, R. A., 315 Peters, R. L., 557 Petersen, A. M., see Munch-Petersen, A. Petersen, S., 193 Peterson, E. A., 458 Peterson, E. H., 406 Peterson, R. D., 222, 334 Peterson, R. E., 239 Peterson, W. E., 404, 405 Peterson, W. H., 355 Petrack, B., 84, 223 Petrushka, E., 385, 386 Pette, D., 670, 671, 678 688 Pettenkofer, M., 635 Pettinga, C. W., 568 Peyser, P., 415 Pfefferkorn, E., 493, 494, 508 Pfeiffer, C. C., 370 Pfisterer, R., 430 Pfleiderer, G., 31, 32, 95, 669, 670, 671 Phaff, H. J., 299 Phillips, A. H., 78, 79 Phillips, A. W., 119, 303 Phillips, J. H., 611 Phillips, J. W., 215 Phillips, P. H., 392 Phillips, P. M., 443 Picard, S., 145 Pickford, M., 553 Piel, W., 118 Pierce, J. G., 185, 560, 561 Pietra, G., 583 Pigman, W., 105, 116 Pillemer, L., 629 Pillet, J., 458 Pincus, G., 565 Pine, E. K., 600 Piozzi, F., 113 Pirie, A., 447 Pirie, N. W., 458, 478 Pirrie, R., 691 Pirt, S. J., 121, 122 Pisano, J. J., 217, 222 Pitkänen, E., 670 Pitkethly, R. C., 653 Pitney, A. J., 445 Pitney, W. R., 437 Pitt, B. M., 239 Pittet, A. O., 110 Pitt-Rivers, R., 173, 199 Pizer, F. L., 136, 137, 138

Pizer, L. I., 30, 81, 131, 431 Platzeck, A., 265 Plaut, G. W. E., 16, 446, 697 Plaut, W., 510, 511 Plescia, O., 611 Plimmer, J. R., 196 Plum, C. M., 379, 380, 381 Pocchiari, F., 295-346; 304, 310, 316, 317, 319, 329, 331, 333 Pochon, F., 458 Poduska, K., 187 Pogell, B. M., 298 Polgar, L., 492 Polis, B. D., 243, 696 Pollard, C. J., 393, 394, 397, 398, 692 Pollard, E., 489 Pollard, E. C., 487, 488, 585 Polonsky, J., 113, 120, 135, 146 Pomerantz, S. H., 272 Pomeroy, B. S., 407 -Pontremoli, S., 320 Poole, A. G., 144 Pope, A. L., 392, 399 Pope, C. G., 616, 628 Popenoe, E. A., 115, 198, 549, 555 Popják, G., 27, 78, 261, 282, 283, 285, 681 Porath, G. S., see Schatz-berg-Porath, G. Porath, J., 186, 548 Porfirieva, R. P., 214 Portatius, H. von, 202 Porter, H., 376 Porter, H. K., 296 Porter, J. C., 558 Porter, J. W., 263, 283, 284, 286 Porter, J. W. G., 403 Porter, R. R., 65, 174, 175, 610, 615, 616, 618, Portman, O. W., 638, 639 Portocala, R., 480, 481 Poser, C. M., 380 Posner, 1., 95 Possley, L., 381, 383 Posternak, T., 137, 140, Postgate, J. R., 349, 351 Posthumus, C. H., 25, 56, Potter, G. C., 407 Potter, G. D., 234 Potter, J. L., 467 Potter, L. M., 397, 402 Potter, M., 589, 599 Potter, V. R., 504, 505, 527, 578, 582, 583, 590

Potts, J. T., 646

Pounden, W. D., 406, 407 Pover, W. F. R., 208 Powell, G. M., 359 Pozza, G., 569 Prabhu, K. A., 90, 120 Prange, I., 393, 396, 397, 405 Prasad, A., 645 Pratt, J. W., 112 Pravda, Z., 187 Preer, J. R., Jr., 615 Prehn, R. T., 580 Preiss, J., 425, 426, 525, 527, 528, 599 Prelog, V., 195 Prescott, B., 622 Prescott, D. M., 511 Press, E. M., 65 Pressman, D., 616, 618, 626, 627 Prestidge, L. S., 534, 542 Preston, B. N., 466 Preston, W. S., 496 Pretorius, V., 653 Price, G. M., 674 Price, J. M., 237, 250, 422, 424, 681 Price, T. D., 505 Pricer, W. E., Jr., 77, 373 Pride, H. S., 307 Pridham, J. B., 112, 119 Primosigh, J., 492 Prince, A. M., 585 Pringle, B. H., 615 Prins, W., 112 Pritchard, E. T., 371, 372 Pritchard, W. R., 406, 407 Privat de Garilhe, M., 458, 468, 558 Prockeroff, N. N., 233 Prockop, D. J., 247 Proctor, J. F., 392 Prostenik, M., 145 Prudden, J. F., 234 Pudles, J., 134 Pugh, D. E., 332, 333 Pullman, A., 39, 427 Pullman, B., 39, 427, 465 Pullman, M. E., 696 Pumphrey, A. M., 693, 694 Purnell, J. H., 652 Purvis, J. L., 315, 685, 686, 695 Putman, E. W., 135

Q

Quackenbush, F., 401 Quagliariello, E., 237 Quan, C., 384 Quastel, J. H., 312, 385, 386 Quayle, J. R., 97, 318, 326, 327 Querido, A., 561 Quin, L. D., 666 R

Raacke, I. D., 536, 557, 565 Raben, M. S., 562 Rabinowitz, J. C., 80, 423, 454 Rabinowitz, M., 536 Rabson, A. S., 586, 587 Rachele, J. R., 229, 550, 551 Racker, E., 23, 26, 92, 93, 310, 311, 313, 319, 320, 321, 670, 696 Radde, I., 643 Radhakrishnan, A. N., 221 Radin, N. S., 131, 142, 143, 367 Rafaelsen, O. J., 332, 335 Rafelson, M. E., Jr., 318 Raine, L. C., 440 Räisänen, L., 382 Ralston, L. S., 243 Ram, J. S., 610 Ramachandran, G. N., 177 Ramachandran, L. K., 153, 482, 483 Ramakrishnan, C. V., 262 Ramakrishnan, T., 90 Ramot, B., 681 Rampersad, O., 612 Randall, H. T., 643 Randall, R., 646 Randle, P. J., 310, 330, 337 Rands, D. G., 162 Rangarajan, T., 193 Ranke, B., 439 Rao, D. R., 238, 425 Rao, S. S., 438 Raphael, R. H., 665 Rapin, A., 117 Rapoport, S., 81 Rapp, H. J., 629 Rapport, M. M., 142, 143, 144, 365, 366, 367 Rasmussen, H., 244, 318 Rasmussen, P. S., 512 Rasper, J., 57, 161 Rathbun, J. C., 642 Ratner, S., 84, 223, 376 Rattray, J. M. B., 660 Raue, F., 636 Raun, A., 404 Ravel, J. M., 96, 202, 221, 223, 429 Raw, I., 698 Rawi, S. A., see Al-Rawi, S. Rawlinson, W. A., 301 Ray, V. A., 514 Rayford, C. R., 227 Razin, S., 230 Razzell, W. E., 460 Read, M. S., 564 Reames, H. R., 595 Rebeyrotte, N., 587

Recourt, J. H., 659 Reddi, K. K., 456, 458, 459, 460, 461, 479, 518 Reddy, S. K., 422 Redetzki, H., 670 Redetzki, H. M., 617 Redfearn, E. R., 693, 694 Redfield, B. G., 240 Redgate, E. S., 558 Reed, D. R., 317 Reed, G. W., 552 Reed, L. J., 235, 314, 347 Rees, M. W., 220, 489, 403 Rees, W. R., 90, 295 Reese, C. B., 466 Reese, E. T., 302 Reeves, R. E., 113 Rege, D. V., 441 Rehfeld, C. E., 402 Reichard, P., 349, 596, 597 Reichard, G. A., Jr., 332 Reichard, H., 224 Reichle, F., 246 Reid, D., 330 Reid, E., 85, 297, 458 Reid, J. C., 591 Reid, M. R., 599, 600 Reilly, H. C., 600 Reindel, F., 145 Reineke, E. P., 404, 405 Reiner, B., 465 Reiner, J. M., 35 Reinhardt, M., 118 Reinhold, J. G., 635, 638 Reiser, R., 278 Reiser, S., 314 Reiss, O. K., 27, 213, 314, 670 Reller, H. H., 612, 613, 614 Rem, L. T., 313 Remmert, L. F., 393, 696 Remy, C. N., 93, 593, 594 Rendi, R., 526, 531, 532 Rendina, G., 263, 269, 272, 687 Rennkamp, F., 144 Renold, A. E., 332, 335, 337, 338, 570, 683 Renzo, E. C. de, 339 Reppert, J. A., 595 Rerup, C., 558 Resnick, H., 170, 457 Ressler, C., 550, 551, 552 Reuse, J. J., 552 Reymond, D., 430 Reyniers, J. A., 394, 447 Reynolds, J. M., 302 Reynolds, M. S., 422, 424 Reynolds, R. E., 404 Reynolds, S. A., 393 Reynolds, W. M., 404 Rhein, H. C., 642 Rhoades, E. L., 643 Rhodes, M. B., 438 Rhuland, L. E., 595 Ricaud, P., 227

Rice, F. A. H., 111 Rice, S. A., 471 Rich, A., 177, 456 Rich, K., 597 Rich, M. A., 595, 597, 598 Richard, H. H., 225 Richard, M. N., 377 Richards, F. M., 23, 161, 169, 170 Richards, G. N., 110 Richardson, K. E., 323, 430, 681 Richardson, W. L., 191 Richmond, J. G., 583 Richmond, M. H., 592, 593 Richter, D., 374, 375 Richter, G., 145, 334, 510, 670 Richter, M., 620, 621 Richtmyer, N. K., 112 Rickenberg, H. V., 532, Ridd, J. H., 194 Rieche, A., 189 Rieche, A., Ried, W., 189 Riedel, A., 202 Rieder, S. V., 27, 28, 34 Riegl, M., 396 Riesz, P., 657 Rigas, P. A., 565 Riggs, J. K., 399 Riley, M., 537 Rilling, H. C., 27 Rimington, C., 249 Rinaldi, E., 237 Rindi, G., 215, 421 Rinehart, C. K. L., Jr., 115 Ringelmann, E., 21, 99, 273, 287, 427, 428, 429, 430, 681 Ringertz, N. R., 349 Ringler, R. L., 678, 687 688 Riniker, B., 201 Rinke, H., 188 Rinno, H., 188 Risse, S., 405 Ritt, E., 673, 674, 684, 685, 688, 689, 693 Rittel, W., 198, 201, 555, 556 Rittenberg, S. C., 312 Rivers, R. P., see Pitt-Rivers, R. Rivlin, R. S., 232, 236 Rizack, M. A., 660 Roark, J. W., 247 Robbins, A. B., 490 Robbins, J., 215 Robbins, K. C., 47, 48, 55 Robbins, P. W., 347-64; Robbins, P. W., 34 88, 297, 348, 349 Roberts, B., 646 Roberts, E., 95, 125, 214, 216, 352, 376, 421, 422 Roberts, H. J., 113

Roberts, H. R., 203 Roberts, J. B., 264 Roberts, J. C., 619 Roberts, J. G., 110, 125 Roberts, K. E., 643 Roberts, N. R., 242, 379, 670, 671, 672, 673 Roberts, R. B., 219, 536 Roberts, W. K., 458, 459, 460. 466 Robertson, J. S., 613 Robertson, P. A., 552 Robertson, R. N., 314 Robertson, W. van B., 226, 227, 419 Robichon-Szulmajster, H. de, 534, 535 Robin, Y., 217 Robins, E., 670 Robins, R. K., 465 Robinson, D., 353, 359 Robinson, E., 176 Robinson, H. M. C., 642 Robinson, R. M., 570 Robinson, W. G., 263, 269, 272 Roboz, E., 379, 380 Roche, J., 217, 227, 228, 234, 353 Rochovansky, O., 84 Roddy, F., 448 Rodeheaver, J. L., 623 Rodên, L., 298 Rodgers, A., 426 Rodin, J. O., 114 Rodkey, F. L., 673, 679 Rodriguez, J., 520, 587 Rodwell, V. W., 422, 423 Rogers, T. A., 643 Rohatgi, K., 444 Roitman, E., 244 Roitt, D. M., 619 Rolfe, R., 509 Rolinson, G. N., 200 Romano, M., 315 Ronwin, E., 53, 55 Roodyn, D. B., 593 Roos, P., 198, 553, 554 Rosa, J., 534 Rose, F. A., 358, 359 Rose, I. A., 27, 28, 29, 33, 34 Rose, N. R., 619 Roseman, S., 97, 107, 115, 116 Rosemberg, E., 567 Rosen, F. R., 242 Rosenbaum, M., 496 Rosenberg, A., 143, 145 Rosenberg, B. H., 466, 504, 506 Rosenberg, E., 455 Rosenberg, H. R., 419 Rosenfeld, E. L., 124 Rosenman, R. H., 638, 639 Rosenthal, H. L., 440 Rosenthal, S. M., 489, 490 Rosman, H., 230 Ross, A. G., 110, 124 Ross, E. B., 404 Ross, J., 670 Ross, J. D., 586 Ross, L. O., 202 Ross, R. W., 487 Rossi, C., 304, 310, 317 Rossiter, R. J., 86, 140, 371, 372, 373 Rossmeisl, E. C., 646 Roth, D. M., 394, 395, 396 Roth, J. S., 458 Rothe, M., 189 Rother, A., 193 Rothlin, M., 279, 280 Rothschild, A. M., 230 Rothstein, M., 220, 238 Rottger, B., 520 Rottino, A., 586, 588, 589 Roubein, I. F., 455, 456, 463, 510 Roubicek, C. B., 404 Rousche, M. A., 115 Roux, J., 306 Rovery, M., 54 Röwe, K., 202 Rowe, W. P., 586, 587, 588 Rowland, F. S., 658 Rowntree, L. G., 638 Roy, A. B., 97, 354, 355, 357, 358, 359, 360 Roy, J. K., 237 Roy, R. N., 415, 416 Royce, P. C., 558 Rubin, H., 488, 585 Rubini, J. R., 245 Rubino, A., 237 Rudinger, J., 187, 550 Rudkin, G. T., 512 Rudman, D., 636, 637, 639 Rudney, H., 91, 221, 263, 264, 274, 670, 696 Rueff, L. K., see Kröplen-Rueff, L. Rüegg, R., 398, 693 Ruegsegger, P., 243 Ruffo, A., 315 Ruge, U., 395 Ruitton-Ugliengo (Mme.), 378, 379 Rumley, M. K., 369 Rumsfeld, H. W., 558 Ruoff, P. M., 193 Rushizky, G. W., 456, 458, 459, 469, 479, 518 Rusoff, L. L., 404 Russell, J. A., 563 Rustad, R. C., 510 Rutenberg, A. M., 359 Rutter, W. J., 17, 681 Ruzicka, L., 99 Ryan, D. A., 355 Ryan, E. A., 508 Ryan, K. J., 681

Ryce, S. A., 653 Rydon, H. N., 58 Rydziel, I. J., 236 Ryle, A. P., 65, 168, 174, 175 Ryley, J. F., 124 Ryser, H., 670 Ryter, A., 492, 496

Sable, H. Z., 309 Sacerdote, F. L., 325 Sach, E., 120 Sachs, H., 531, 549 Sachs, L., 579, 586 Sacks, J., 569, 677 Sacktor, B., 217, 670, 671, 677, 678, 687, 688, 689, 695, 696 Saegner, E. L., 439 Saffran, M., 558, 559 Sagan, L. A., 511 Sage, H. J., 162 St. Geme, J. W., Jr., 247 Saito, A., 681 Saito, H., 111 Saito, T., 568 Saito, Y., 275 Sakakibara, S., 187 Sakami, W., 208, 224, 269, 442 Sakamoto, A., 239 Sakamoto, Y., 239 Sakatore, G., 235 Sakuragi, T., 422 Salciunas, O., 355 Saldias, C. A., 216, 421 Sallach, H. J., 96, 212, 224 Salser, J. S., 590, 592 Salter, J. M., 570 Saltman, P., 326 Salton, M. R. J., 492 Salvador, R. A., 95, 216 Salvatore, G., 235 Salzman, N. P., 520 Samarth, K. D., 536, 563 Samuel, L., 480, 481 Sanadi, D. R., 314, 687 Sand, S., 67 Sande, M. van, 374, 380 Sanders, B. E., 377 Sanders, F. K., 480, 481, 518 Sandler, M., 240, 246, 249 Sandmann, B., 31 Sandrin, E., 555, 556 Sands, R. H., 20, 32 Sanford, P. E., 407 Sanger, F., 25, 46, 47, 48, 53, 57, 59, 64, 183, 199 Sanger, V. L., 406, 407 Sankar, D. V. S., 84 Sano, I., 194, 217

Saran, A., 422 Sarcione, E. J., 336 Sarkar, S., 240 Sarkaris, D. S., 512 Saroff, H. A., 568 Sartorelli, A. C., 594, 599, 600 Sass-Kortsak, A., 378 Sastry, C. A., 438 Satake, K., 512 Sato, A., 112 Sato, G. H., 490 Sato, K., see Sato-Asano, K. Sato, M., 186 Sato, R., 681 Sato, T., 353, 423, 554 Sato-Asano, K. (formerly Sato, K.), 457 Sauberlich, H. E., 445 Saukkonen, J. J., 539 Saurez-Soto, M., 567 Sautière, P., 202 Sautter, J. H., 402, 406 Savage, G. M., 595 Sawaki, S., 422 Sawyer, W. H., 552 Sayers, G., 558 Sayre, F. W., 214 Saz, H. J., 325 Scaife, J. F., 385 Scala, R. A., 447 Scannell, J. P., 461, 510 Scardi, V., 241, 423 Scarso, L., 568 Schabel, F. M., Jr., 590, 591 Schachman, H. K., 484 Schaechter, M., 508 Schaeffer, P., 578 Schäfer, H., 190 Schafer, W., 480, 520 Schaffer, F. L., 480 Schaffer, R., 114 Schaffry, J., 670 Schairer, M. V., 508 Schally, A. V., 203, 548, 549, 558, 559 Schambye, P., 334 Scharrer, B., 547 Scharrer, E., 547 Schatzberg-Porath, G., 385 Schaub, L., 638 Schaub, R. E., 107, 117 Schayer, R. W., 230, 613 Scheinberg, I. H., 377 Schellenberg, K. A., 27, 213, 670 Schellenberg, P., 191 Schellman, C. G., 48, 159 Schellman, J. A., 152, 154, 156, 157, 158, 159, 161, 163, 165, 174, 178 Scheraga, H. A., 26, 53, 55, 160, 163, 164 Scherbel, A. L., 249 Schiff, L., 636

Schiller, A. A., 613 Schimassek, H., 669, 670, 671, 678 Schimazono, N., 322 Schindler, O., 398, 693 Schindler, R., 240, 595 Schleimer, B., 189 Schlenk, F., 674 Schlenk, H., 282 Schlesinger, M. J., 263 Schlesinger, S., 494 Schlie, 1., 395 Schlossmann, K., 352 Schlueter, R. J., 46 Schmidt, E., 670, 671 Schmidt, F., 488, 581, 589 Schmidt, F. W., 670, 671 Schmidt, G., 143, 371 Schmidt, H., 114, 617 Schmir, G. L., 26, 52, 58, 153, 184, 185 Schmittle, S. C., 406, 407 Schmitz, H., 115 Schnabel, E., 191, 192 Schneckloth, R. E., 248 Schneider, J. J., 353, 355 Schneider, S., 313, 670, 681, 684 Schnek, G., 162 Schoessler, M. A., 198 Scholefield, P. G., 385, 386 Scholfield, C. R., 144 Scholl, M. L. L., 618 Schollmeyer, P., 674, 689 Schonbaum, G. R., 52 Schoolman, H. M., 589 Schöpf, A., 197 Schopfer, W. H., 140, 430 Schor, J. M., 570 Schram, A. C., 235 Schramm, G., 475, 478, 484, 517, 519, 520 Schramm, M., 23, 26, 92, 320, 670 Schreibman, I., 347 Schreier, Von K., 430 Schröder, W., 582 Schroeder, J. L., 282 Schroeder, W., 595 Schroeder, W. A., 176 Schubert, J. R., 393 Schuerch, C. S., 112 Schuh, V., 199 Schullenberger, C. C., 440 Schultz, A., 29 Schultz, G., 675 Schultz, J., 513, 578 Schultze, M. O., 391-412; 398, 402 Schulz, A., 23 Schulze, H. O., 241, 305 Schumaker, V. N., 507 Schuster, H., 478 Schuster, L., 425, 426 Schutz, B., 686 Schwartz, B., 226, 227 Schwartz, D., 508, 557

Schwartz, E. T., 555, 556 Schwartz, H. C., 23, 63, 172 Schwartz, I. L., 198, 570 Schwartz, J. R., 561 Schwartz, M., 438 Schwartz, M. K., 643 Schwartz, R., 591, 592 Schwartz, R. S., 592 Schwartz, S., 438 Schwartz, S. O., 589 Schwarz, H., 197, 198 Schwarz, J. C. P., 107 Schwarz, K., 391, 392, 393, 394, 395, 396, 397 Schwarz, R., 419, 623 Schweet, R. S., 525, 528, 536 Schweigert, B. S., 212, 237, 424, 443 Schwerin, P., 618 Schwert, G. W., 26, 27, 32, 36, 51, 52, 670, 671, 672 Schwieter, U., 39, 398, 693 Schwyzer, R., 183-206; 188, 189, 191, 196, 197, 198, 200, 201, 555, 556 Scian, L. F., 198 Scoffone, E., 568 Scott, E. M., 95, 218, 315, 422 Scott, J. F., 82, 526, 527, 528, 529, 530 Scott, L., 406, 407 Scott, M. L., 391, 392, 393, 394, 395 Scott, N. D., 122 Scott, R. P. W., 654, 656 Scrimgeour, K. G., 95 Seaforth, C. E., 196 Searls, R. L., 314, 687 Searly, R. L., 203 Sebera, D., 39 Sebring, E. D., 520 Séchaud, J., 496 Seecof, R. L., 221, 242 Seegers, W. H., 46, 55 Segal, H. C., 232 Segal, H. L., 33, 97, 333, 348, 349, 353, 354, 355 Segal, S. J., 565 Segaloff, A., 564, 565, 566 Segel, I. H., 305 Segni, G., 320 Seibl, J., 183 Seibles, T. S., 26 Seidman, E. M., 505 Seifter, S., 66, 177 Seitli, I., 121 Seitz, W., 670 Seki, S., 193 Sekiguchi, M., 476, 491, 496, 507 Sekiguchi, T., 118 Sekuzu, I., 23, 690 Sela, M., 64, 163, 165,

168, 555, 611 Seligman, A. M., 359 Seligson, D., 243 Selim, A. S. M., 225 Sell, S., 617 Sellers, R. F., 480 Sellinger, O. A., 670 Sells, B. H., 595, 596 Seltmann, G., 191 Semenza, G., 20 Semina, L. A., 223 Semm, K., 552 Sen, S. P., 437 Sendroy, J., 244 Senez, J. C., 266 Seng, H. T., see Ting-Seng, H. Seno, N., 111 Senoh, S., 233 Senti, F. R., 121 Seo, S., 217 Serck-Hanssen, K., 133 Sereni, F., 232 Serif, G. S., 324, 331 Serles, E. R., 642 Serne, N. K., 490 Setlow, J., 489, 493 Seubert, W., 262, 263, 283, 285, 681 Severin, E. S., 202 Severin, S. E., 229 Sewell, R. F., 405 Shack, J., 470 Shafa, F., 492 Shafizadeh, F., 116, 117, 282, 296 Shainoff, J. R., 616 Shakespeare, N. E., 557 Shamyakin, M. M., 114 Shannon, L. M., 275, 316 Shapiro, B., 282 Shapiro, D., 142 Shapiro, S. K., 224 Shapiro, S. L., 335 Shapleigh, E., 629 Sharman, G. A. M., 645 Sharon, N., 28, 115, 526 Sharp, D. G., 585 Sharpless, G. R., 585 Shattuck, H. F., 636, 637, 638 Shaw, A. R., 626 Shaw, C. J. G., 108 Shaw, D. F., 106 Shaw, W. N., 282, 338 Shaw, W. V., 333, 683 Shchukina, L. A., 210 Shearer, G. B., 477 Shearer, G. D., 378 Sheba, C., 681 Sheehan, J. C., 191, 196, 199 Shemin, D., 91, 225, 437 Shen, T. Y., 116 Shen Han, T. M., 116, 117 Shepard, R. S., 46 Shepherd, R. G., 557

Sherlock, S., 637, 638, 639 Sherman, B., 616 Sherman, W. B., 609 Sherman, W. C., 404 Sherry, S., 48, 54, 55 Shershul'skaia, L. V., 581 Sherwood, L., 670, 671 Shiba, S., 496, 507, 601 Shibasaki, K., 120, 493 Shibata, A., 89 Shields, G. S., 63 Shiffman, G., 610 Shifrin, S., 670, 671, 672 Shiio, I., 219 Shilov, E. A., 210 Shimazono, H., 275 Shimazono, N., 323, 415, 681 Shimizu, H., 529 Shimp, N. F., 20, 690 Shimura, K., 47, 76, 221 Shine, H. J., 50 Shinton, N. K., 439 Shiota, T., 442 Shipley, B. A., 48, 57 Shipley, R. A., 304 Shiraki, M., 351 Shive, W., 96, 202, 221, 223, 429 Shmukler, H. W., 696 Shockley, T. E., 307 Shoemaker, W. C., 332, 333 Shohet, S. S., 682 Sholefield, P. G., 312 Shonk, C. E., 678 Shooter, K. V., 470, 490 Shope, R. E., 488 Shore, V., 484 Shore, V. G., 534 Shorland, F. B., 662 Shpikiter, V. D., 177 Shreeve, W. W., 207, 309 Shrift, A., 395 Shubik, P., 583 Shue, G., 407 Shugar, D., 162, 454 Shukla, J. P., 90, 120 Shukri, M. A., see Al-Shukri, M. Shull, K. H., 315 Shullenberger, C. C., 589 Shulman, S., 48 Shunk, C. H., 398, 399, 693 Shuster, L., 208, 425, 426 Sibal, L. R., 618 Sidky, M., 244 Sie, H. G., 320 Sieber, P., 191, 196, 200 Siebert, G., 16 Siegel, A., 483, 519, 520 Siegel, M., 620 Siekevitz, P., 697 Sigal, H. V., 114 Sih, C. J., 308 Sikes, D., 406 Silber, R., 217

Silva Carvalho, J. da, 112 Silver, L., 198 Silverman, M., 445 Silverstein, A. M., 629 Siminovitch, L., 586, 588 Simkin, J. L., 81, 441, 537 Simmons, C., 233 Simmons, M. C., 657 Simmons, N. S., 483, 503, Simms, E. S., 83, 504, 594, 597 Simoes, M. S., see Sobrinho-Simoes, M. Simon, E. J., 391, 396 Simon, H., 598 Simonovitch, L., 505 Simonsen, D. G., 642, 645 Simpan, M. V., 691 Simpson, C. F., 406 Simpson, F. J., 324 Simpson, L., 590 Simpson, M. E , 565 Simpson, M. S., 590, 591, 593 Simpson, M. V., 532, 537 Simpson, R. B., 156, 158 Sims, M. R., 629 Sims, P., 359 Sinex, F. M., 226 Singer, B., 477, 478, 484, 518 Singer, S. J., 162, 176, 616, 617, 626, 627 Singer, T. P., 678, 687, 688 Singh, H. D., 420 Singsen, E. P., 397, 402, 406 Sinsheimer, R. L., 503-24; 468, 471, 476, 477, 491, 503, 509, 518, 578, 597, 598 Sipe, H. M., 586 Siperstein, M. D., 330, 333, 334, 683 Sipos, E., 407 Sirotnak, F. M., 504 Siu, P. M. L., 414 Sizer, I. W., 95, 232, 241, 421 Sjoberg, S. G., 438 Sjoerdsma, A., 239, 240, 246 247, 248 Sjövall, J., 636 Skeggs, H. R., 21, 448 Skellenger, M., 244 Skinner, C. G., 202, 221 Skipper, H. E., 582, 589, 590, 591, 592, 593, 595, 598, 599, 600, 601 Skipski, V. P., 142, 143, 367 Škoda, J., 82, 595 Sköld, O., 595, 596, 597 Skrentny, B. A., 379

Slaminski, P., 112 Slater, E. C., 670, 674, 684, 688, 691, 694, 695, 696 Slater, J. S., 218 Slater, R. J., 378 Slater, S. R., 638 Slater, W. G., 316 Slaton, W. H., Jr., 278, 280 Slaughter, C., 210 Slein, M. W., 670 Slenczka, W., 670, 672, 673, 674, 678, 684, 685, 686, 687, 688, 689, 693, 695 Slifer, E. D., 135 Slingerland, D. W., 234 Sloane Stanley, G. H., 143, 366, 368 Slocum, D. H., 29 Sluys, I. van der, 56, 384 Sluyser, M., 530 Small, A. M., 107 Smellie, R. M. S., 504 Smillie, L. B., 54, 58, 152, 165 Smirnova, N. P., 623 Smith, A. J., 642 Smith, A. N., 248 Smith, C. W., 617 Smith, D. B., 131, 175 Smith, D. E., 670 Smith, D. G., 616 Smith, E. E. B., 85 Smith, E. L., 23, 24, 26, 46, 55, 56, 57, 59, 60, 61, 62, 63, 64, 151, 167, 170, 171, 172, 174, 175, 176, 440, 568, 569 Smith, F., 39, 107, 108, 110, 112, 124, 567 Smith, G. H., 310, 330, 650 Smith, H. W., 595 Smith, J., 441, 443 Smith, J. D., 456, 458, 459, 460, 461, 462, 469, 490, 507, 510, 528, 597 Smith, J. F., 569 Smith, J. N., 359 Smith, K. C., 463, 528 Smith, K. M., 487 Smith, M. J., 593, 594 Smith, M. S., 85, 116, 495, 513 Smith, R. M., 22, 268 Smith, R. T., 622 Smith, S. W., 85 Smith, T. E., 227, 228, 419 Smith, V. N., 653 Smith, W. O., 642, 643, 645 Smits, G., 369 Smyrniotis, P. Z., 320, 446 Smyth, R. D., 22, 212, 268 Snell, E. E., 21, 209, 221, 420, 422, 423

Snell, E. S., 223 Snell, N., 196 Snell, R. S., 382 Sniff, E. E., 442 Snyder, E., 21 Snyder, F., 368 Snyder, M., 401 Snyderman, S. E., 244 Sobel, A. E., 638 Sobel, H., 338 Sober, H. A., 458 Sobotka, H., 440, 447 Sobrinho-Simoes, M., 315 Soda, T., 357, 359, 360 Sodd, M. A., 88, 304, 426 Soejima, M., 47 Sokal, J. E., 336, 586 Sokoloff, L., 215 Solomon, J. B., 313, 315 Sols, A., 75, 76, 312, 313 Soly, N., 490 Someroski, J. F., 238, 425 Somerville, R., 75, 495, 513 Søndergaard, E., 393, 396, 397 Sonenberg, M., 559, 561 Sörbo, B., 91, 263 Sörensen, E. W., 379 Sorm, F., 56, 82, 199, 595 Sormovå, Z., 82, 595 Soto, M. S., see Saurez-Soto, M. Soule, D. W., 486 Soupart, P., 244 Soutar, S. F., 248 Southard, W. H., 309 Sowden, J. C., 112 Sowinski, R., 628 Spackman, D. H., 168 Spanner, S., 369, 370 Sparks, C., 590, 591, 593 Speck, J. C., 28 Spector, A., 46, 48, 54 Spector, W. G., 581 Spell, W. H., Jr., 442 Spence, W. P., 306 Spencer, A. G., 643 Spencer, B., 353, 356, 357, 358, 359, 360, 361 Spencer, J. F. T., 119 Spencer, K., 583 Spencer, R. P., 239 Spencer, T., 31, 36, 37, 49, 51, 52 Spencer, W. A., 371 Sperti, S., 320 Speyer, J. F., 16 Spiegel, H. E., 141 Spiegelman, S., 532, 536, 539 Spiers, J. A., 628 Spink, W. W., 243 Spiricher, V. B., 210 Spiro, R. G., 298 Spirtes, M. A., 672

Spivak, C. T., 116

Spivey-Fox, M. R., 393, 394, 398, 440 Spolter, L., 97, 356 Sporn, M. B., 374, 375, 376 Sprague, J. M., 21, 448 Spray, G. H., 437 Spriggs, A. S., 112 Spring, K., 480 Springmann, H., 117 Sprinson, D. B., 92, 320 Sprunt, K., 518 Spruth, H. C., 405 Spühler, G., 555, 556 Spuhler, V., 480, 518 Spurrier, W., 589 Squibb, R. L., 399 Squire, P. G., 199, 564, 565 Squires, C. C., 284, 287 Squires, C. L., 348 Sreenivasan, A., 439, 441 Srere, P. A., 262, 263, 670 Sribney, M., 85 Srinivasan, P. R., 92, 235, 320, 599 Staab, H. A., 189 Stacey, M., 117, 119, 609, 611 Stacey, R. S., 246 Stack, J., 591 Stade, K., 670 Stadie, W. C., 338 Stadtman, E. R., 209, 270, 271, 446, 681, 683 Stadtman, T. C., 207 Staehelin, M., 595 Stahl, F. W., 505, 506 Stahmann, M. A., 611 Stammer, C. H., 114 Stanačev, N. Z., 145 Stanier, R. Y., 264 Stanley, G. H. S., see Sloane Stanley, G. H. Stanley, R. G., 326 Stanley, W. M., 483 Stansley, P. G., 282 Stanton, M. F., 586, 587, 589 Staples, D A., 367, 369 Stark, O. K., 613 Starr, M. P., 322 Staub, A. M., 113, 135, 146 Staudinger, H. G., 418, 681, 698 Stauff, J., 57, 161 Stavitsky, A. B., 670, 671 Stedman, E., 512 Steele, R., 304, 333, 336, 337, 569 Steelman, S. L., 198, 553, 564, 565, 566 Steenbock, H., 314 Steere, R. L., 479, 518 Steers, E., 594

Stegemann, H., 202 Stein, A., 373 Stein, A. M., 427, 671, 686, 687 Stein, B. R., 51 Stein, W. D., 58, 170 Stein, W. H., 26, 151, 167, 168, 169, 170, 174, 354, 456 Stein, Y., 282 Steinberg, D., 282, 534 Steinberg, F., 637, 638 Steinberg, G., 278, 280 Steiner, D. F., 333, 621 Steiner, R. F., 626 Steinert, G., 511 Steinert, M., 511 Steinpreis, R., 119 Stekol, J. A., 352 Stelakatos, G. C., 188 Stender, H. S., 611 Stenhagen, E., 133 Stent, G. S., 490, 491, 506, 537 Stephens, N., 368 Stephenson, B. J., 438 Stephenson, M. L., 82, 526, 527, 528, 529, 530 Stern, B. K., 670, 681 Stern, D. N., 225 Stern, I. J., 324 Stern, J. R., 261, 262, 263 Sternberger, L. A., 616 Sterzl, J., 622, 623 Stesney, J. A., 395 Stetten, D., Jr., 123 Stetten, M. R., 123, 301 Steuben, K. C., 189, 193 Steuerle, H., 202 Stevens, A., 224 Stevens, C. O., 236, 446 Stevens, K. M., 622 Stevens, M. A., 465, 595 Stevens, M. F., 616 Stevenson, I. H., 300 Stevenson, T. D., 440 Stewart, C J., 324, 331 Stewart, D. L., 480, 518, 520 Stewart, J. A., 52 Stewart, S. E., 586, 587 Steyn-Parvé, E. P., 31, 261 Stich, H. F., 513 Stickland, R. G., 681 Stierlin, H., 113 Stiffey, A. V., 220 Stim, E. M., 225 Stirm, S., 113, 135, 146 Stirm, S., 113, 135, 146 Stitt, C., 326 Stob, M., 404 Stock, C. C., 202, 600 Stock, J. A., 202 Stockell, A., 31, 59, 60, 61, 670 Stocking, C. R., 511

Stoerk, H. C., 611 Stoffel, W., 659, 663 Stohlman, F., 46, 48 Stoker, M. G. P., 487 Stokstad, E. L. R., 391, 392, 393, 400, 403 Stoll, W. G., 196 Stolzenbach, F. E., 425, 670, 671 Stone, E. J., 404 Stone, R. S., 488 Stone, S. S., 48 Stoppani, A. O. M., 325 Storey, I. D. E., 300 Storm, O., 381 Stotz, E., 141, 143, 366, 397, 690, 691 Stouthamer, A. J., 324 Stracher, A., 161, 170, 196 Straessle, R., 158 Strand, A., 307 Strässle, R., 569 Straub, G., 210 Strauch, D., 611 Straumanis, L., 156 Strauss, E. W., 440 Strauss, R. S., 429 Streamer, C. W., 246 Streisinger, G., 489, 493, 507 Strickland, K. P., 86, 140, Strittmatter, P., 27, 671, 697 Strode, C., 477 Strohmaier, K., 480, 487, 518 Strominger, J. L., 74, 85, 97, 116, 316, 356, 681 Strunz, K., 391, 394, 396 Stryer, L., 23, 158 Stulberg, M. P., 26, 81 Stumpf, P. K., 261-94; 28, 261, 267, 270, 275, 283, 284, 287, 289, 290 Sturm, E., 614 Sturman, M. F., 660 Sturtevant, J. M., 49, 51, 52, 58, 62 Sturtevant, T., 31, 36, 37, 38 Stutinsky, F., 564 Stutts, P., 590, 591, 594, 597 Stutz, E., 299 Stutzman, F. L., 643, 645 Stuy, J. H., 510, 517 Sueoka, N., 509 Sugiura, M., 217 Sukumaran, M., 242 Sullivan, E., 53 Sullivan, J. F., 440 Süllman, H., 638 Sulman, F. G., 557 Sumita, S., 217 Sund, H., 670 Sundheim, L., 396

Supplee, W. C., 403 Suskind, S. R., 235, 516, 538 Sutra, R., 302 Suzuki, I., 326 Suzuki, K., 322, 415, 681 Suzuki, S., 97, 353, 356, 360 Suzuki, T., 353, 423 Svab, A., 202 Swabey, L. G., 488, 489 Swallow, D. L., 196 Swan, J. M., 187 Swanson, W. J., 393, 402 Swedin, S., 636 Sweeley, C. C., 143, 145, 250, 367, 661 Sweeney, H. M., 552 Sweet, D., 310 Sweetman, B. J., 192 Swendseid, M. E., 244, 443 Swenson, A. D., 23 Swick, R. W., 27 Swindin, W. A., 201 Swingle, K. F., 393 Sykes, J. A., 587, 589 Sykes, J. F., 404 Sylianco, C. Y. L., 237, 446 Synge, R. L. M., 183, 650 Syrett, P. J., 310 Syverton, J. T., 480, 482, 487 Szabolcsi, H., 23 Szara, S., 239, 681 Szeinberg, A., 380, 681 Szent-Györgyi, A., 447 Szent-Györgyi, A. G., 155, 156 Szilard, P., 636 Szulmajster, H. de R., see Robichon-Szulmajster, H. Szybalski, W., 593 T Tabachnick, M., 670 Tabor, H., 94, 444 Taffel, M., 644 Taguchi, T., 496, 507, 601 Tähepöld, L. J., 214

Tabachnick, M., 670
Tabor, H., 94, 444
Taffel, M., 644, 507, 601
Tähepöld, L. J., 214
Tai, H.-I., 119
Takagi, M., 454, 455, 456
Takagi, Y., 321, 496, 507, 527, 595
Takahashi, H., 218
Takahashi, K., 186
Takahashi, N., 353, 356, 360, 361
Takahashi, W. N., 478
Takahashi, Y., 556
Takadashi, Y., 556
Takahashi, Y., 566
Takahashi, Y., 576

Takemura, S., 454, 455, 456, 457 Takeshita, M., 95, 210 Takki-Luukkainen, I. T., 439 Talalay, P., 684 Talbot, G., 187 Taliaferro, L. G., 618, 620 Taliaferro, W. H., 618, 620, 621 Tallan, H. H., 354 Talmage, D. W., 612, 619, 621, 629 Talmage, P., 91 Tanaka, R., 177 Tanaka, S., 307 Tanaka, T., 235, 237 Tanford, C., 26, 158, 162 Tang, J., 65, 174 Tani, F., 558 Taniuchi, H., 237 Tanner, C. E., 610 Tansley, K., 310 Tanzer, M. L., 670 Tapley, D. F., 333, 683 Tappel, A. L., 282, 692 Tarding, F., 334 Tarver, M., 526, 534 Tashian, R. E., 232, 246 Tahiro, M., 237 Tashiro, S., 638 Tatibana, M., 75 Tattrie, N. H., 661 Taube, N., 39 Tauber, S., 439 Taubert, M., 552 Tauböck, H., 371 Tauman, G., 380 Tavs, P., 660, 664 Tawab, G. A. A., see Abdel-Tawab, G. A. Tayeau, F., 627 Taylor, D. B., 407 Taylor, D. W., 449 Taylor, H. E., see Ephrussi-Taylor, H. Taylor, J. F., 396 Taylor, J. H., 403, 508, 511, 512 Taylor, K. B., 437 Taylor, M., 310, 670 Taylor, N. W., 488, 489 Taylor, R. R., 400 Taylor, S. M., 249 Taylor, T. J., 116 Taylor, W. H., 65 Tchen, T. T., 27, 78 Teichman, R., 402 Teitelbaum, P., 658 Tekell, G. S., 642, 645 Tekman, S., 619 Telka, M., 29 Teller, D. N., 445 Teloh, H. A., 642 Temin, H. M., 488, 585 Teng, C. T., 337 Tepper, I., 643

Terada, M., 493 Terawaki, A., 496, 507, 601 Terayama, H., 670 Terres, G., 613 Terrill, K. D., 64 Terry, L. L., 246, 248 Tessari, L., 334 Tessman, E. S., 491, 504 Tessman, I., 491, 504 Thafvelin, B., 392 Thain, E. M., 241 Thakur, V., 153 Thannhauser, S. J., 143, 371 Thaureaux, J. J., see Jollès-Thaureaux, J. Thayer, P. S., 220 Theodoropoulos, D. M., 188 Theorell, H., 31, 32, 36, 133, 670, 671 Thevenet, M., 360 Thiele, O. W , 366 Thoai, N. V., 217, 228, 234 Thofern, E., 322 Thoma, J. A., 123 Thomas, B. E., 370 Thomas, C. A., Jr., 489, Thomas, G. J., 121, 124, Thomas, J., 357, 358 Thomas, J. W., 404 Thomas, W. R., 55 Thomasson, H. J., 277, 278 Thompsett, J. M., 470 Thompson, A., 112, 119 Thompson, D. H., 244 Thompson, E. O. P., 59, 64 Thompson, J. F., 226 Thompson, R. H. S., 365-90: 74, 385 Thompson, T. A., 555, 556 Thompson, W., 86, 140, 373 Thomson, J., 121, 122 Thomson, J. R., 590, 591, 593 Thomson, P. J., 191 Thomson, R., 618 Thomson, R. Y., 505 Thorell, B., 686 Thorn, J. A., 132 Thorn, M. B., 690 Thorn, N. A., 552, 553 Thorn, W., 670 Thorson, A., 248 Threlfall, C. J., 425 Tibbets, D. M., 643 Tidball, M. E., 332 Tietz, A., 16, 77, 80, 89, 268, 269, 282, 283, 284, 285, 429 Tietze, E., 193 Timasheff, S. N., 65, 482 Tinelli, R., 113, 135 Ting, S. M., 678

Ting-Seng, H., 214

Tinoco, I., Jr., 49, 50 Tipson, R. S., 111 Tipton, C. L., 120 Tischer, H., 191 Tisdale, H. D., 691 Tishkoff, G. H., 46, 48 55 Tissières, A., 529, 536, 462 Titchener, E. B., 284, 285, 429, 681 Titus, E. O., 141, 239, 248, 595 Tjio, J. H., 586 Tkacz, L., 347 Todd, A., 396, 692 Todd, A. R., 39, 456, 464, 466, 469 Toennies, G., 443 Tokuyasu, K., 174 Tolmach, L. S., 504 Tomchick, R., 93, 230 Tomcsik, J., 609 Tomisek, A. J., 599, 600 Tomita, K., 234 Tomizawa, H. H., 569, 570 Tomizawa, J., 496, 507 Tomizawa, S., 590, 591, 592 Tomkins, G. M., 670, 687 Tomlin, S. G., 177 Tomoda, M., 120 Toms, B. A., 158 Tong, W., 234 Toohey, J., 440, 441 Topper, Y. J., 27, 28, 31, 338 Torbert, J. V., 670 Toschi, G., 382 Tourtellotte, W. W., 379 Tousimis, A. J., 247 Touster, O., 413, 679, 681 Tower, D. B., 215, 216, 376 Townsend, J., 32 Townsend, J., Träger, L., 309 Trager, W., 442 Tramer, Z., 162 Trams, E. C., 143 Trapmann, H., 193 Trapnell, B. M. W., 38 Traub, A., 309 Traub, W., 430 Traut, R. R., 88, 297 Trautschold, I., 334 Travaglini, E. C., 513 Traverso-Cori, A., 78, 79, 222 Trebst, A., 598 Trelease, S. F., 391, 395 Trenner, N. R., 398, 693 Triantaphyllidis, E., 234 Trillat, J. J., 134 Triplett, E. L., 618 Trnka, Z., 623 Trousof, N., 323, 413, 414, 430, 681 Trucco, R. E., 65, 174, 416

Tschabitscher, H., 379 Tsien, S. H., 145 Tsuiki, S., 105, 116 Tsujisaka, Y., 122 Tsunoda, T., 219 Tsuyuki, H., 611 Tsvetikov, A. N., Tubbs, P. K., 313 Tucula, P., 145 Tudball, N., 359 Tufts, E. V., 644 Tull, L., 566 Tunc, S., 618 Tung, T. C., 678 Tuppy, H., 53, 64, 183, 552, 555 Turchetto, E., 559 Turnbull, J. H., 56, 626 Turner, C. W., 564 Turner, J. E., 157 Turner, J. F., 75, 310, 311 Turner, J. M., 191 Turner, K. J., 177 Turner, M. D., 636 Turvey, J. R., 120, 123 Tutting, G., 273 Tuttle, S. G., 244 Twiehaus, M. J., 407 Tyberghein, J. M., 335, 570 Tyrell, D. A. J., 486

ι

Uchio, H., 49 Udenfriend, S., 207-60; 217, 222, 228, 233, 234, 239, 240, 245, 247, 248, 250 Ueda, K., 447 Uetake, H., 584 Ugliengo, (Mme.) R., see Ruitton-Ugliengo (Mme.) Uhr, J. W., 617 Ukita, T., 454, 456 Ulbrich, J., 191 Ulfelder, H., 566 Ul Hassan, M., 415, 681 Ulmann, A., 529 Ulmann, S. von Z., see Zahn-Ulman, S. von Umbreit, W. W., 214 Umezawa, H., 627 Unemoto, T., 208 Ungar, B., 335 Ungar, G., 331 Unger, R. H., 335 Unrau, A. M., 110, 124 Uphoff, D. E., 592, 599 Uranaka, K., 228 Usdin, E., 443 Utsumi, A., 234 Utter, M. F., 77, 325, 680, 681 Utumi, S., 422 Uzman, L. L., 367, 369, 381

XF.

Vagelos, P. R., 209, 270,

271, 287 Valcourt, A. J., 249 Valentine, R. C., 325, 492 Vallee, B. L., 36, 213, 642, 645, 670 Vallee, G., 90 Vallet, L., 377 Van Adrichem, M. B., 52, 57 Van Bibber, M. J., 75, 495, 513 Van Cleve, J. W., 107, 110 Van Damme, O., 480 Van den Driessche, R., 552 Vander, A. J., 379 Van der Kloot, W. G., 215 van der Sluys, I., see Sluys, I. van der Van der Wende, C., 690 Van de Ven, A. M., 525 Van Dyke, D. C., 565 Van Dyke, H. B., 549, 552 Vanéček, J., 56 Van Eys, J., 670, 671 Van Fossan, D. D., 642, 645 Van Gulick, N. M., 39 van Heyningen, W. E., see Heyningen, W. E. van Vanko, M., 687 VanMatre, N. S., 404 Vannatta, E. E., 447 Vanngard, T., 32 Vannotti, A., 670 Van Oordt, G. J., 556 Van Reen, R., 670 Van Rotterdam, J., 25, 55, 56 van Sande, M., see Sande, M. van Van Slyke, D. D., 107, 226 Van Tamelen, E. E., 105 Van Vunakis, H., 170, 489, 490, 507 Varadarajan, S., 464, 466 Vardheim, S. V., 117 Varner, J. E., 29 Varon, H. H., 198 Vaslow, F., 34, 54 Vasudevia, P., 439 Vaughan, J. H., 598 Vaughan, M., 534 Velcoff, S. M., 565 Veldee, S., 484 Velick, S. F., 32, 670, 672 679 Ven, A. M., Van de, see Van de Ven, A. M. Venkataraman, A., 141 Venkaturanam, P. R., 512 Vennesland, B., 28, 670, 679, 681 Vercauteren, R., 29 Verly, W. G., 208 Vernejoule, P. de, 54, 55 Vernon, C. A., 241

Vesell, E. S., 671 Vestermark, A., 353, 354 Vestling, C. S., 670 Vickery, H. B., 316 Vidal, G., 618 Vidaver, G. A., 494 Vidrine, A., Jr., 325 Vielmetter, W., 479, 515, 519 Vigier, P., 585 Vignais, P. V., 262, 373 Vigneaud, V. du, 185, 187, 197, 200, 201, 347, 548, 549, 550, 555 Vilkas, E., 141 Villar-Palasf, C., 75, 88, 297, 312 Ville, J., 635 Villee, C. A., 306, 684 Vincze, A. I., 202, 220 Vinograd, J. R., 176 Virtanen, A. I., 194 Vishniae, W., 670 Vishwakarma, P., 313 Visser, D. W., 224 Viswanatha, T., 57 Vithayathil, P. J., 23, 169 Vitter, R. F., 486 Vittorio, P. V., 306 Viulleumier, J. P., 279 Vivian, V. M., 424 Vlitos, A. J., 361 Vlitos, A. J., Voelker, I., 319, 331 Vogel, 635 Vogel, H. J., 220, 227, 540 Vogell, W., 670, 671, 678, 688 Vogelsang, K. H., 670 Vogler, K., 192 Vohra, P., 220 Voigt, K., 203 Voigt, K. D., 565 Volcani, B. E., 422, 423 Volk, W. A., 308 Völker, W., 582 Volkin, E., 461, 496, 510, 537 Vollmayer, E., 598 Voloss, C. M., see Mialhe-Voloss, C. van Bruggen, J. T., see Bruggen, J. T. van von Brand, V., see Brand, V. von von Bulow-Kästner, J., see Bulow-Kästner, J. von von Euler, H., see Euler, H. von Von Hippel, P. H., 177 von Korff, R. W., see Korff, R. W. von von Zahn-Ulmann, S., see Zahn-Ulmann, S. von Vries, A. de, 439, 629 Vuysteke, C. A., 570

Vyshepan, E. D., 214

W

Waalkes, T. P., 240, 248 Wabnitz, C. H., 394, 396 Wach, E. C., 419 Wacker, A., 309, 598 Wacker, W. E. C., 642, 645, 670 Wada, A., 154 Wada, T., 214 Waddill, F. S., 244 Wade, R., 202 Wadkins, C. L., 34, 696, 697 Waelsch, H., 93, 228, 374, 375, 376 Wagle, S. R., 212, 441, 530 Wagner, A., 117 Wagner, H., 145, 280 Wagner, J., 282, 361 Wagner, R. P., 220, 221, 242 Wahba, A. J., 321, 322 Wahl, R., 509 Wahlroos, O., 202 Waibel, P. E., 404, 407 Wainfan, E., 57, 262 Wainio, W. W., 20, 690 Waisman, H. A., 234, 236 Waite, H., 49, 50 Wajda, M., 369, 370 Wakil, S. J., 99, 262, 283, 284, 285, 286, 429, 681 Walaszek, E. J., 199, 552 Waldenstrom, J., 248 Waldschmidt-Leitz, E., 66 Waley, S. G., 199 Walker, G. J., 90, 122, 123, 124, 295 Walker, H. C., 237, 424 Walker, J. R. L., 316 Walker, L., 570 Walker, T. K., 300 Wall, J. S., 336, 337 Wallace, F. A., 466 Wallace, H. W., 245 Wallace, R. E., 581 Wallenfels, K., 20, 670 Waller, C. W., 115 Waller, H. D., 670, 671 Waller, J. P., 197, 550, 557 Walshe, J. M., 378 Walshe, V., 637, 638 Walter, A. W., 620 Walter, H., 612, 614 Walter, W. G., 585 Walters, C. P., 240 Walton, E., 114 Walwick, E. R., 466 Wang, J. H., 39, 317, 319, 324 Warburg, O., 582, 682 Ward, D. N., 202, 586 Ward, O. N., 548 Ward, R. B., 112

Waritz, R. S., 477, 478 Warms, J. V. B., 282 Warner, R. C., 171, 268, 392 Warnock, C. G., 379 Warren, F. L., 124 Warren, L., 115 Warringa, M. G. P. J., 25, 56, 383 Warsi, S. A., 106, 125 Warter, J., 636, 638 Wasem, E. A. L., see Lazo-Wasem, E. A. Wash, J. J., 243 Washko, M. E., 333 Wasserman, L. R., 406, 439 Watabe, N., 32 Watanabe, I., 496 Watanabe, K., 112 Watanabe, T., 119 Watanabe, Y., 76, 221 Watchorn, E., 644 Waterhouse, C., 696 Waterson, A. P., 487 Watkins, W. M., 120, 609, 610 Watson, C. J., 438 Watson, J. D., 462, 483, 503, 515, 536 Watson, M. R., 507 Wawszkiewicz, E. J., 212 Way, J. L., 590, 591, 593, 594, 595 Weaver, M. L., 479, 518 Webb, E. C., 33, 35, 37, 49, 91 Webb, J., 280, 660, 664 Webber, J. M., 117, 282, 296 Weber, E. J., 144, 145, 146 Weber, F., 397, 691, 692, 693 Weber, G., 304, 670 Weber, M. M., 671, 692 Weber, R. E., 158 Webley, D. M., 113, 265, 266, 307, 319 Webster, G. R., 365-90; 28, 367, 371, 374, 385, 536 Wecker, E., 480, 481, 518 Wegenknecht, A. C., 431 Wegmann, E., 192 Wehrmüller, J. O., 116 Weickmann, A., 145 Weidel, W., 492 Weigel, M., 120 Weigle, W. O., 613, 617, 621, 622, 623, 629 Weil, L., 26 Weill, J., 510 Weimberg, R., 308 Wein, J., 611 Weinhouse, S., 332, 569, 672

Weinke, K., 611 Weir, D. M., 611 Weise, V. K., 558 Weiss, E., 192 Weiss, H., 141 Weiss, M. J., 107, 117 Weiss, S. B., 82, 431 Weissbach, A., 92, 308, 320, 321, 327, 413, 681 Weissbach, H., 207-60; 22, 212, 239, 240, 248, 268, 440, 441 Weissmann, B., 528 Welch, A. D., 595 Welch, E., 674, 686 Welch, J. G., 392 Welch, L. R., 509 Welch, Q. B., 404 Welkie, G. W., 479 Wende, C. V., 20 Wener, C. E., 319 Wenner, C. E., 682 Werkheiser, W. C., 598 Werkman, C. H., 325, 326 Wernitsch, W., 686 Wertman, K., 448 Wertman, M., 642, 645 West, E. S., 222, 289, 334 Westall, R. G., 244, 245, 376 Westermann, C. D., 198 Westhead, E. W., 534 Westheimer, F. H., 20, 429, 448 Westley, J., 96 Westling, H., 230 Westover, L. M., 642, 645 Westphal, O., 113, 131, 135, 146, 183, 610 Wetlaufer, D. B., 164 Weygand, F., 114, 118, 188 Wharton, F. D., Jr., 404 Wheatley, V. R., 659, 660 Whedon, A. D., 449 Wheeler, G. P., 590 Wheeler, W. E., 618 Whelan, W. J., 105-30; 90, 106, 110, 112, 113, 118, 120, 121, 122, 123, 124, 125, 295 Whistler, R. L., 110, 113 White, F., 314, 687 White, F. H., Jr., 168, 170 White, J. W., Jr., 119 White, N. F., 557 White, R. F. M., 194 White, R. G., 623, 624 White, W. F., 557 Whitehead, D. F., 115 Whitehead, T. P., 380 Whitehouse, M., 262 Whiteley, H. R., 21, 80 Whitfield, P. R., 469 Whittaker, M., 124 Whittaker, S. R. F., 380

Wiberg, C., 561 Wick, A. N., 275, 324, 331, 336, 569 Wickström, A., 119 Widdowson, E. M., 214 Wider, C. M., 515, 519 Widmer, C., 396, 691, 693, 694 Widmer, C., Jr., 278 Widom, J. M., 163, 164 Wieder, C. M., 479 Wieland, O., 683 Wieland, T., 31, 183, 197, 202, 669, 670, 671 Wieme, R. J., 313, 670, 671 Wiener, E., 691 Wiest, W. G., 336 Wilbur, K. M., 32, 327 Wilcox, P. E., 57, 161 Wilcox, W. S., 590 Wildhirt, E., 670, 671 Wildman, S. G., 483, 519 Wildy, P., 487, 506 Wiles, L., 505 Wiley, P. F., 114 Wilhelmi, A. E., 563 Wilkins, J. M., 67 Wilkins, M. H. F., 503 Will, J. J., 439 Willey, G. L., 385 Williams, A. D., 230 Williams, A. K., 322, 324 Williams, C. A., 615 Williams, C. H., Jr., 687 Williams, D. C., 359 Williams, D. E., 47 Williams, E. J., 165 Williams, G. R., 684, 689 Williams, J. M., 115 Williams, K., 359 Williams, M. A., 279 Williams, R. C., 477, 489, 490 Williams, R. H., 333, 335, 568, 569, 570 Williams, R. J. P., 36, 670 Williams, R. R., 48 Williams, R. T., 353, 359 Williams, W. L., 403, 439 Williams-Ashman, H. G., 679, 681, 684 Williamson, D. H., 317 Williamson, M. B., 64 Willingham, H. E., 405 Willis, V., 666 Wills, J. H., 385 Willson, S. D., 557 Wilson, A. R., 590, 591, 593 Wilson, A. T., 327, 329 Wilson, D. W., 635, 638 Wilson, G. M., 398, 693 Wilson, H. R., 503 Wilson, I. B., 36, 384 Wilson, J., 325

Wilson, J. D., 330 Wilson, J. E., 202 Wilson, L. G., 84, 348, 349, 350 Wilson, M. W., 615 Wilson, R. M., 212 Wilson, S., 175 Wilson, T. H., 440, 674, 680 Wilson, V. K., 376 Wilson, W. E., 213, 217 Wilzbach, K. E., 143, 657 Winchester, C. F., 404 Windmueller, H. G., 427 Winegrad, A. I., 332, 338, 570, 683 Winer, A. D., 27, 36, 670, 671, 672 Winitz, M., 188, 192, 212 Winkelman, J., 414 Winkler, A., 626, 627, 628 Winkler, M. H., 158 Winklerova, I., 626 Winnick, R. E., 83, 229 Winnick, T., 83, 229 Winocour, E., 586 Winter, H., 611 Wiser, W., 135 Wiss, O., 397, 398, 424, 691, 692, 693 Wissler, F. C., 512 Wissler, R. W., 619 Witebsky, E., 619 Witkop, B., 153, 184, 185, 228, 233, 234, 570 Witten, P. W., 279 Wittenbach, C., 81 Wittenburg, B., 394 Witter, R. F., 696 Wittmann, H. G., 520 Witzel, H., 454, 467, 468 Wizerkaniuk, M., 347, 348, 353, 355 Woerner, W., 669, 670 Woernley, D. L., 512, 616 Woessner, J. F., 227, 273 Wojczak, L., 696 Wojtczak, A. B., 696 Woldow, I., 439 Woldring, M. G., 439 Wolf, B., 209 Wolf, D. E., 398, 693 Wolf, J. P., II, 49, 53 Wolf, S., 65, 174 Wolfe, H. R., 620, 628 Wolfe, J. B., 275 Wolfe, R. S., 325 Wolfe, S. J., 448 Wolff, E. C., 352, 670 Wolff, H. G., 381 Wolff, I. A., 110 Wolfgang, R., 658 Wolfrom, M. L., 112, 116, 117, 119, 120, 282, 296 Wolfson, S. K., Jr., 679, 681 Wolins, W., 613

Wollman, E., 508 Wollman, E. L., 578 Wolthers, H., 670 Womersley, R. A., 643 Wong, E. L., 399 Wong, F. E., 666 Wong, K. K., 526 Wong, R. C., 57 Wong, W. T., 212 Woo, P. W. K., 115 Wood, H. G., 269, 300, 319, 325, 414 Wood, H. N., 52 Wood, H. W., 26, 31 Wood, J. L., 96 Wood, J. W., 111 Wood, N. F., 595 Wood, R. C., 443, 445, 594 Woods, D. D., 212, 224 Woods, P. S., 508, 511, 512 Woody, B. R., 477 Wool, I. G., 330 Woolf, L. I., 245, 376 Woolley, D. W., 144, 355 Woolner, M. E., 555, 556 Wooner, M. E., 555, 556 Wooton, J. C., 407 Wootton, I. D. P., 635-48; 636, 637, 638, 639 Wootton, J. F., 57, 67 Work, E., 219, 220, 394 Work, T. S., 525 Wormall, A., 612, 613 Wormser, E. H., 76, 210 Wortman, B., 313 Wostmann, B. S., 447 Wright, D., 231 Wright, D. E., 447 Wright, E. M., 309 Wright, G. P., see Payling Wright, G. Wright, J. H., Jr., 569 Wright, P. H., 332, 569 Wright, R. R., 670 Wriston, J. C., Jr., 208, 226 Wróblewski, F., 242, 313, 670, 671 Wu, C. C., see Cheng-Wu, C. Wu, M. L., 379 Wu, P. H. L., 238, 425 Wu, R., 310, 311 Wu, S. H., 678 Wu, T. C., 528 Wünsch, E., 193 Wurmser, R., 629 Wurmser, S. F., see Filitti-Wurmser, S. Wyatt, G. R., 469 Wyman, J., 26 Wyngaarden, J. B., 87, 247, 594 Wyngarden, L., 94, 444 Wynn, C. H., 358 Wynston, L. K., 560, 561

Wysocki, A. P., 638, 639 Wyss, O., 514 Wyss, R., 279 Wythenbach, C., 29

#### v

Yaffe, D., 579 Yagi, T., 351, 355 Yajima, H., 555, 556 Yale, S. H., 419 Yalow, R. S., 208 Yamada, E. W., 275, 277 Yamada, H., 237, 307 Yamada, K., 322, 323, 415, 422, 681 Yamada, M., 423 Yamdeya, Y., 230 Yamaguchi, K., 416 Yamaha, T., 89, 302 Yamamoto, T., 122, 561 Yamasaki, M., 535 Yamashita, T., 66 Yamazaki, E., 234 Yang, C.-S., 392, 395, 396 Yang, J. T., 154, 157, 158, 159 Yanofsky, C., 235, 425, 516, 538 Yao, F.-O., 670, 671 Yasnikov, A. A., 210 Yatco-Manzo, E., 448 Yazaki, C., 422 Ycas, M., 534 Yefimochkina, E. F., 79 Yeh, S., 439 Yenson, M., 629 Yesair, D. W., 440 Yielding, K. L., 687 Yokoyama, H., 221 Yonemoto, R. H., 682 Yonetani, T., 23, 48, 690 Yoshida, A., 535 Yoshida, F., 67 Yoshikawa, H., 75, 353 Yosizawa, Z., 116 Youkotsky Gore, I., 681 Young, B. G., 111 Young, F. G., 337, 338, 559, 570 Young, H. L., 670, 678 Young, I. E., 506 Young, L., 347 Young, L. C. T., 326 Young, R., 586 Young, R. H., 275, 316 Young, R. S., 441, 442 Youngquist, R. W., 123 Youngs, C. G., 202, 659 Yount, R. G., 448 Yphantis, D. A., 95, 224, 241, 421 Yu, C.-T., 461, 510 Yu, S. Y., 53, 229 Yu, T. F., 208 Yu, W., 119 Yura, T., 227

Yushok, W. D., 312 Yuwiler, A., 240

2

Zabin, I., 262, 373
Zacharius, R. M., 199, 226
Zachau, H. G., 527, 529
Zahler, S. A., 491
Zahn, H., 192, 202
Zahnd, G. R., 335
Zahn-Ulmann, S. von, 520
Zaki, O., 250
Zakrzewski, S. F., 598, 681
Zalkin, H., 282, 692
Zalokar, M., 511, 536
Zaltzman, P., 239
Zamecnik, P. C., 28, 82, 371, 385, 525, 526, 527, 528, 529, 530

Zamenhof, S., 455, 465, 515, 597
Zannoni, V. G., 232, 417, 418
Zaoral, M., 187, 550
Zarriello, J. J., 243
Zarrow, M. X., 565
Zebe, E., 669, 670, 671, 677, 678, 688, 695
Zeber, E. C., 282
Zeller, E. A., 240, 249
Zentner, H., 135
Zervas, L., 188, 192
Zetterquist, O., 30
Zgliczýnski, J. M., 226
Zhenodarova, S. M., 191
Zickgraf, H., 380
Ziegler, D. M., 670, 687, 688, 690, 694, 695
Ziemann, H., 118
Zliff, M., 247

Zikmund, E., 202 Zilber, L. A., 581 Zile, M., 240 Zillig, W., 530 Zimmerman, M., 616 Zimmerman, S. B., 75, 83, 494, 495, 504, 513, 584, 597 Zimmermann, B., 558, 559 Zinkham, W. H., 670, 681 Zioudrou, C., 84, 233 Ziporin, Z. Z., 517 Zipper, H., 66 Zottu, S., 303, 682, 683 Zubay, G., 466, 470, 504, 510 Zuber, H., 198, 201, 555, 556 Zucco, P. S., 653 Zwicker, H., 618

# SUBJECT INDEX

Α

Acetaldehyde biosynthesis of, 21 fatty acid biosynthesis and, 285-86 metabolism of, 318 Acetanilide electronic excitation of, 193-94 Acetate fatty acid synthesis from, 282-87 glutamate and metabolism of. 212 metabolism of, 317-18 metabolism in nervous tissue of, 372 Acetoacetate biosynthesis of, 29, 262-63 oxidation of, 263 Acetoacetic decarboxylase purification and properties of, 429 Acetoacetyl coenzyme A acetyl coenzyme A condensation with, 263 a-Aceto-a-hydroxybutyrate isoleucine biosynthesis and, 220 Acetoin biosynthesis of, 21 \alpha - Acetolactate valine biosynthesis and, L-Acetylalanine alanine metabolism of, 210 Acetylation of aspartate, 212 of diglycine, 193 Acetylcholine inositol phosphatide biosynthesis and, 431 phosphate exchange and, 373 Acetylcholinesterase kinetics of, 36 Acetyl coenzyme A acetoacetyl coenzyme A condensation with, 263 carboxylation of, 429 reducing system properties of, 681 Acetylene dicarboxylic acid metabolism of, 276-77 Acetylenic acids

metabolism of, 276-77

in microorganisms, 276-

Acetylethylcarbinol isoleucine biosynthesis and, 220-21 6-0-Acetyl-D-glucopyranose biosynthesis of, 307 6-0-Acetyl-D-glucose from microorganisms, 113 Acetylmethylcarbinol valine biosynthesis and, 220-21 N-Acetylneuraminic acid structure of, 115 Acid reversion of carbohydrate, 111-13 Aconitase fluorocitrate inhibition of, 315 isocitrate configurations and, 29 mechanism of, 16 Acryl coenzyme A β-alanine biosynthesis and, 209 Actinidin isolation of, 64 Active site of enzymes, 24-27 Acyl adenylates reactions of, 17 Acylase II β-methyl asparate and, 192 Acylation of chymotrypsin, 31 of glyceraldehyde-3phosphate dehydrogenase, 31 Acyl shift in hydroxyamino acids, 152-53 in lysozyme, 152 oxazolines and, 152 protein structure and, 152 Acvl transferases biochemistry of, 90

in vitamin B<sub>12</sub>, 212
Adenine-1-N-oxide
antimetabolite activity of,
595
Adenohypophyseal hormones
biochemistry of, 553-66
Adenosine
sedoheptulose-7-phosphate
biosynthesis and, 320
Adenosine diphosphate
and adenosine triphosphate

alkylation of, 465-66

nicotinamide and bio-

synthesis of, 208

protonation of, 464-65

exchange, 34 and oxidative phosphorylation, 696-97 Adenosine diphosphatesulfurylase reaction catalyzed by, 348-49 Adenosine monophosphate 6-mercaptopurine and biosynthesis of, 592 Adenosine nucleoside phosphorylase sulfate inhibition of, 90 Adenosine nucleotides glutamic dehydrogenase inhibition by, 213 phosphotransferase reaction and, 74 Adenosine-3'-phosphate-5'phosphosulfate reactions of, 97 Adenosine-5'-phosphosulfate metabolism of, 348-49 reduction of, 350 Adenosine triphosphatase and oxidative phosphorylation, 697 Adenosine triphosphate actomyosin cleavage by, 29 and adenosine diphosphate exchange, 34 3-alanine activation by, 209 D-alanine activation by, 209 amino acid activation by, 525-26 amino acid transfer and, 530 in bacteriophage, 493 carbon dioxide activation and, 272-73 carnosine synthesis and, 83 citrulline activation of, 84 diglyceride phosphorylation by, 373 fatty acid biosynthesis and, 282-84 reactions of, 17-19 ribonucleic acids activation by, 527 sulfate activation by, 84, 348-49 transphosphorylation and, 75 xanthosine monophosphate amination and, 86 Adenosine triphosphate sulfurylase

reaction catalyzed by, 348

S-Adenosylmethionine histamine methylation by, 230

 methylthioadenosine and, 224-25
 methyl transfer reactions

of, 93

stoichiometry of synthesis of, 16

Adenylate kinase kinetics of, 36 substrate binding and, 31

Adenylosuccinate biosynthesis of, 79 6-mercaptopurine and metabolism of, 592

Adenylyl transferases biochemistry of, 83-84 Adipose tissue

glucose metabolism in, 683

Adjuvant antigen and, 611 Adrenalectomy

effect on carbohydrate metabolism, 336-37 Adrenal gland

coenzyme A levels and,

Adrenal hormones carbohydrate metabolism and, 335-57

Adrenocorticotrophic hormones

nomenclature of, 198 Agamatine

oxidation of, 230 Agglutination lectin and, 629

mechanism of, 628-29 Alanine L-acetylalanine and, 210 as lipid precursor, 210

as lipid precursor, 210 metabolism of, 209-10 pyruvate and, 209 β-Alanine

β-Alanine acryl coenzyme A and biosynthesis of, 209 adenosine triphosphate activation of, 209 anserine biosynthesis and,

biosynthesis of, 209-10 malonic semialdehyde synthesis of, 210

D-Alanine

activation of, 209 in bacterial cell walls, 209 in teichoic acid, 84 Alanine dehydrogenase

Alanine dehydrogenase diphosphopyridine nucleotide and, 209

Albumin antigenicity of, 610 of brain, 374 optical rotation of, 158 oxidative phosphorylation and, 696 ultraviolet spectroscopy and, 162-65 volume changes of, 159 Alcohol

detoxication of, 353 sulfurylation of, 353

Alcohol dehydrogenase diphosphopyridine nucleotide binding by, 32

kinetics, 36 properties of, 670 purification of, 313 succinic semialdehyde

and, 216 Aldolase

dihydroxyacetone phosphate tritiation by, 29 enzyme-substrate complex of, 34

terminal residue removal, 22

urea inactivation of, 23 Aldonolactonase activity of, 415

Aldose reductase properties of, 681 Ali-esterase

alkylfluorophosphate effect on, 384-85

Alkylation of adenine, 465-66 of 2-aminopyridine, 464-

65 of deoxyribonucleic acid, 516-17

of guanine, 465-66 of methionine, 168-69 of ribonuclease, 26, 168 Alkylsulfatase

existence of, 361 Allergy

antibodies and, 617-18
L-Alliosoleucine
ribonucleic acids incor-

poration of, 529 Amadori rearrangement amino sugar synthesis by, 116

α-Amanitin hydrolysis of, 197 Amethopterin

aminoimidazolecarbox amide metabolism and, 599

folic acid analogue, 444, 598-99 Amidination

azaserine inhibition of, 599-600 Amidines

synthesis of, 193 Amines gas chromatography of,

650 Aminoacetone biosynthesis of, 211 glycine and synthesis of, 211

Amino acid activation of, 525-26 activation of analogues of, 525-26

activation of vitamin B<sub>12</sub> and, 44

analysis for, 186 antibiotic analogues of, 202

aromatic biosynthesis of p-aminobenzoic acid and, 235 of 5-dehydroquinic acid and, 320-21

of 5-dehydroshikimic acid and, 320-21 of glucose and, 320-21

blood levels of, 244 brain incorporation of, 375-76

catalysis of model substrate, 193 of cerebrospinal fluid, 380

chemistry of, 183-206 chloral derivatives of, 190 chromatography of, 202 dinitrophenyl derivatives of, 202

disease and metabolism of, 242-50 fructose derivative of,

195 gas chromatography of, 658-59

guanosine triphosphate and transfer of, 530 infrared spectra of, 194 isolation of, 186

Kwashiorkor and blood levels of, 244 lysozyme sequence of, 24, 170-71

metabolism of, 207-60 metal ion complexes of derivatives, 193

new naturally occurring, 194-95 papain sequence of, 171

pathways of incorporation of, 531-32 in pepsin, 172-73

plasma levels of, 244 pools of, 532-33 racemization of, 191-92 reactions of, 192-94 resolution of racemates.

191 of ribonuclease, 167-69 sugar derivatives of, 195 synthesis of, 186-87 synthetic analogues of,

transamination of, 241-42

transfer to ribonucleic acid. 526-29 urinary excretion of, 244 Amino acid analogues protein biosynthesis and, 533-35 Amino acid polymerase protein synthesis and, 532 Aminoaciduria Hartnup's syndrome and, 250 p-Aminobenzoic acid aromatic amino acid synthesis and, 235 -Aminobutyric acid assay for, 219 brain metabolism and, 420derivatives of, 217-18 distribution of, 215-16 y-guanidinobutyric acid synthesis from, 217 a-ketoglutarate reaction with, 315 metabolism of, 95, 215-19 oxidation of, 217 physiological function of, 215 pyrrolidine as precursor of, 218 transamination of, 216 y-Aminobutyric acid transaminase specificity of, 218 Amino group imido ester reaction with, 193 γ-Amino-p-hydroxybutyric acid in brain, 194-95 Aminoimidazolecarboxamide ribotide amethopter in and metabolism of, 599 B-Aminoisobutyric acid in urine, 244-45 8-Aminolevulinic acid biosynthesis of, 91 as deoxyribose precursor, 207 vitamin B<sub>12</sub> biosynthesis and, 437-38 6-Amino-nicotinamide incorporation into diphosphopyridine nucleotide, 427 β-Aminopropionitrile lathyrism and, 247 Aminopterin folic acid analogue, 444-

45, 598-99

alkylation of, 464-65

biochemistry of, 114-17

mutations and, 515

2-Aminopyridine

2-Aminopurine

Amino sugars

synthesis of, 116-17 cancer and, 580 Aminotransferases cultivation of cells for ming, biochemistry of, 95-96 621-22 Ammonia detection of, 614-15 activation of, 84 fluorescent derivatives of, metabolism of, 214-15 Amoeba hapten combination with. nucleic acid synthesis in, 625-26 510-11 mmunochemistry and, Amygdalin 614-25 hydrogenation of, 112 immunological unrespons-Amylase iveness, 622-23 isolation and purification action of, 121-22 carbonium ion and, 30 of, 615-16 immunochemistry of, 302 metabolism kinetics of, 619-21 Amylglucosidase properties of, 302-3 labeling of, 616-17 Amylopectin mechanism of formation, biosynthesis of, 296 623-25 Q-enzyme and synthesis non-precipitating, 617-18 of, 123 reaction with antigen, 625-30 separation from amylose, 121 site of formation, 618-19 Amylose Anticancer agents biosynthesis of, 122-23, recent developments, 589-295-96 601 D-enzyme action on, 295 Anticholinesterases formylation of, 113 oximes as antidote for, 384 fractionation of, 121 Antidiuretic hormone separation from amylopecsee Vasopressin tin, 121 Antigens synthesis of, 90 adjuvants, 611 Anaerobiosis cancer and, 579-80 citrate and, 315-16 immunochemistry and, Anemia 609-14 folic acid and, 445 immunopolysaccharides, vitamin B<sub>12</sub> and, 438 609-10 Aneuploidy labeling of, 611-12 cancer and, 577 metabolic fate of, 612-13 5-N, 10-N-Anhydroformylpersistence of, 613-14 tetrahydrofolic acid proteins, 610 purine biosynthesis and, reaction with antibody, 625-444 30 l, 5-Anhydro-D-glucitol of tobacco mosaic virus, enzyme inhibition by, 113-520 14 Antimetabolite 1, 5-Anhydro-D-glucitol-6adenine-1-N-oxide, 595 phosphate and cancer, 589-601 hexokinase inhibition by, Antioxidants 75 vitamin E as, 397 2,5-Anhydro-L-idose D-Apiose synthesis of, 112 synthesis of, 114 Anserine Aplastic anemia  $\beta$ -alanine and biosynthesis in cattle, 402 of, 83 L-Arabinose biosynthesis of, 83, 229 dialdehyde of, 107 Anthranilic acid epimerization of, 112 biosynthesis of, 235 L-2-keto-4, 5-dihydroxy-Antibiotics valerate biosynthesis carbohydrates in, 105 and, 308 cysteine thioester and, 202 metabolism of, 308 dithiane ring and, 195 D-Arabinose-5-phosphate glutamine derivative and, biosynthesis of, 308 202 Arachidonic acid nutrition and, 403 metabolism of, 278-79

structure of, 195-96

Antibody

pyridoxine and synthesis of,

Arbutin biosynthesis of, 89 D-Arginase characteristics of, 222 L-Arginase purification of, 222 Arginine creatine biosynthesis and, guanidino group in, 188 metabolism of, 222-24 Arginine decarboxylase requirements for synthesis of, 223 Argininosuccinic acid mental deficiency and excretion of, 376 Argon detector for gas chromatography, 653, 655 Arsenite periodate oxidation of, 106-7 Arteriosclerosis fatty acids of, 661 Arylamines sulfurvlation of, 354 Arylsulfatases biochemistry of, 357-60 Arylsulfonamides hypoglycemic effect of, 334-35 Ascarylose isolation of, 113 periodate oxidation of, 113 Ascorbic acid biosynthesis of, 321-24 in animals, 413-16 and drugs, 416 in plants, 416-17 catabolism of, 417 collagen biosynthesis and, 418-19 corticotropin and, 558-59 cytochrome-b5 and, 418 dentine and deficiency of, folic acid metabolism and, 443 functions of, 417-20 D-galactose and synthesis of, 413-14 glucose-6-phosphate metabolism and, 417 glucuronic acid pathway and, 413-17 D-glucuronolactone and synthesis of, 415 L-gulonic acid and synthesis of, 414-15 hydroxylation of proline and, 226 hydroxyproline and 419 p-hydroxypyruvic acid oxidase and, 417-18 2-keto-L-gulonolactone and synthesis of, 414-

lycorine and synthesis of. norepinephrine synthesis and, 233 pantothenic acid and synthesis of, 448 photosynthesis and, 418 D-Ascorbic acid activity of, 419 L-Ascorbic acid biochemistry of, 413-20 Asparaginase barbiturate effects on, 214 Asparagine metabolism of, 214-15 thermodynamic values of, 214 Aspartic acid acetylation of, 212 diaminopimelic acid precursor, 219 metabolism of, 211-14 Aspartic transcarbamylase specificity of, 224 Autoantibodies formation of, 619 Avian leukemia viruses properties of, 488 Avidin use of, 20 8-Azaguanine anticancer agent, 592-93 penicillinase synthesis and, 539 Azaserine amidination inhibition by, 599-600 anticancer agent, 599-601 diphosphonucleotide biosynthesis and, 426 formylglycinamide ribotide metabolism and, glutamine metabolism and, 599 6-Azauracil anticancer agent, 595-96 orotidine antagonist, 595-B

functional groups in, 196
Bacteria
see Microorganisms
Bacteriophage
adenosine triphosphate in,
493
adsorption and penetration
of, 492-93
adeoxycytidine hydroxymethylase and, 494
deoxycytidylate triphosphatase and, 513
deoxyguanylate kinase
and, 495

Bacitracin A

deoxynucleotide polymerase and, 495 deoxyribonuclease and, 494 deoxyribonucleic acid and chromosome of, 507-8 deoxyribonucleic acid and infectivity of, 513-14 glucose metabolism and, 495 host cell metabolic changes and, 493-96 infection enzymes formed during, 513-14 lysozyme in. 492 maturation of, 496-97 Bacteriophage OX 174 single-stranded deoxyribonucleic acid in, 503-4 structure of, 491-92 Bacteriophage S13 single-stranded deoxyribonucleic acid in, 504 structure of, 491-92 Bacteriophage T2 constituents of, 488-91 6-methylaminopurine in, 490 particle weight of, 488-89 protein component of, 490 protein synthesis and, 497 Bacteriophage T4 L-tryptophan and adsorption of, 492 Bacteriophage T5 effects on host cell of. 493-94 Barbiturates asparagine and, 214 Benzimidazole vitamin B12 inhibition by, 440 Benzoquinones nutrition and, 398-99 S-Benzyl-D, L-cysteine synthesis of, 187 Betaine as creatine precursor, 222 Bicarbonate role in fatty acid biosynthesis, 284-85 Biguanides hypoglycemic effect of, 335 Bile acids in blood, 635-41 jaundice and, 637-40

methods of estimation of,

normal values of, 637

biochemistry of, 669-708

dehydrogenases, 669-72

635-36

pruritus and, 639

Biological oxidations

diphosphopyridine nucleotides and, 672-76 L-glycerol-1-phosphate and, 676-79 microsomes, 697-98 mitochondria and, 684-87 oxidative phosphorylation and, 694-97 respiratory chain and, 687-94 triphosphopyridine nucleotide and, 679-84 biochemistry of, 427-30 carbon dioxide and, 21 coenzyme function of, 99 fatty acid synthesis and, 282, 287-89 malic enzyme and, 430 mechanism of action of, 428-29 metabolism of, 430 β-methylcrotonyl coenzyme A and, 273 β-methylcrotonyl-coenzyme A carboxylase and, 428 ornithine transcarbamylase synthesis and, 224 oxalacetate carboxylase and, 20 oxalacetate decarboxylase and. 430 pyruvic acid metabolism and, 429 review of, 347 Bismuth hydroxide ribonucleic acid hydrolysis by, 467-68 Blood amino acid levels in, 244 bile acids in, 635-41 fatty acids of, 660 Kwashiorkor and amino acids in, 244 Blood-group substances fucose in, 609-10 galactose in, 609-10 glucosamine in, 609-10 polysaccharides in, 609-10 Boric acid

glucose polymerization by, 111
Borohydride disulfide reduction by, 168-69
Boron trifluoride peptide bond cleavage and, 153-54
Brain albumin in, 374 amino acid incorporation into, 375-76 y-aminobutyric acid in, 420-21 y-amino- $\beta$ -hydroxy bu- trifluoride trifluoride polymerization in the properties of the properties o

tyric acid in, 194-95 asparaginase in, 214 γ-butyrobetaine in, 217 cholesterol incorporation into, 369-70 choline incorporation into, 370 cholinesterase distribution in, 381-82

in, 381-82 disease and protein content of, 375 fatty acid metabolism in, 373

373 globulin of, 374 glucose in lipids of, 371 glucose in lipids of, 371 glucose metabolism in, 304-5 glutamic decarboxylase

in, 420-21
glutamine levels in, 214
γ-guanidinobutyrate in,
217
β-hydroxy-γ-aminobutyrate

in, 217 hydroxylamine metabolism in, 420-21 lipid metabolism in, 369-70

metabolism in, 420-21 methionine incorporation in, 375 mevalonic acid in, 373-74 phospholipase and, 385-86

phosphoprotein metabolism in, 375 proteins of, 374-75 pseudocholinesterases of, 382

pyridoxal phosphokinase in, 420-21 toxopyrimidine and, 421 Branch chain fatty acids metabolism of, 272-75 Bromelain

biochemistry of, 63-64 Bromination of tyrosine, 184-85 N-Bromosuccinimide

N-Bromosuccinimide peptide bond cleavage by, 153

phloretic acid reaction with, 185 tryptophanyl bond cleavage by, 153

tyrosine reaction with, 184-85 5-Bromouracil

anticancer agent, 597-98 mutations and, 515 Brucine

D, L-threonine resolution by, 192 Bushy stunt virus protein components of, 484 γ-Butyrobetaine in brain, 217 Butyryl dehydrogenase copper and, 261 forms of, 261

C

Cadaverine
oxidation of, 230
Caeruloplasmia
copper binding by, 377
Calcium ion
chymotrypsin binding of,
51
Cancer
aneuploidy and, 577

antibodies and, 580 anticancer agents, 589-601 8-azaguanine and, 592-93 azaserine and, 599-601 6-azauracil and, 595-96 biochemistry of, 577-608 5-bromouracil and, 597-98

carbohydrate metabolism and, 305-6 carcinogenesis, 577-85 2,6-diaminopurine and, 593-94 6-diazo-5-oxo-L-norleu-

6-diazo-5-oxo-L-norleucine and, 599-601 enzyme synthesis and, 578 episomes and, 578 5-fluoropyrimidines and, 596-97 folic acid analogues and,

folic acid analogues and, 598-99 histocompatibility and, 579-80 5-mercaptopurine and, 590-

92 6-thioguanine and, 594-95 tumor viruses, 585-89

Capillary column for gas chromatography, 654-55 Carbamyl phosphate

biosynthesis of, 80 synthetase partial reactions of, 223 stoichiometry of reaction, 16

Carbamyltransferases biochemistry of, 96 Carbohydrates acid reversion of, 111-13 amino sugars, 114-17 anhydrides of, 111-12 in antibiotics, 105 of bacterial lipopolysaccharides, 146 chemistry of, 105-30

chemistry of, 105-30 enzymatic isomerization of, 27 epoxides of, 105 fat conversion into, 289-90

gas chromatography of, 664-66 phosphate glucans, 121-25 in glycolipids, 131-35 Carboxylase activation of, 21 metabolism of, 295-346 adrenalectomy and, 336-37 Carboxylation adrenal hormones and, 335-37 alternative pathways of, 325 318-24 of pyruvate, 327 cancer and, 305-6 carbon dioxide fixation of histidine, 170 and, 325-27 glycolysis and, 309-13 growth hormone effect on, 337-38 54 hexoses, 303-7 Carcinogenesis hormones and, 329 pentoses, 307-9 photosynthesis and, 327-29 polysaccharides and di-579-84 saccharides, 295-303 steroid hormones and, Carcinoid 338-39 tricarboxylic acid cycle Cardiolipin and, 313-18 monosaccharides, 113-14 by, 141 nomenclature of, 105-6 Carnitine oligosaccharides, 117-21 periodate oxidation of, 106-11 Carnosine in plants and fungi, 105 of seaweed, 105 Carboline alkaloids synthesis of, 193 Carbon dioxide Carotene activation of, 80, 272-73 autotrophic assimilation of, 326 221 biotin activation of, 21, 428-29 of, 221 carbohydrate metabolism Casein phosphate and, 325-27 fixation of, 325-27 Catechol fluorokinase and, 77 formate and fixation of, Catecholamines 326-27 heterotrophic assimilation of, 326 246-47 malic enzyme and fixation Cathepsin of, 325 microorganism fixation of, 325-26 oxalacetate decarboxylase Cattle and, 325 6-phosphogluconate and fixation of, 327 photosynthesis and, 327-29 511-13 starch and assimilation Cellobiose of. 296 Carbonic anhydrase kinetics of, 36

Carbonium ion

and, 30

Carbonyl diimidazole

mechanism of enzyme action

peptide synthesis and, 189

2-Carboxy-4-ketopentol diof. 296 metabolism of, 296 photosynthesis and, 328 Cephalin in influenza virus, 485 as methyl group acceptor, of acetyl coenzyme A, 429 Ceramide of phosphoenol pyruvate, sphinogomyelin precursor, 86 Cerebrocuprein I Carboxymethylation diethyldithiocarbamate reaction with, 376-77 of ribonuclease, 170 Cerebroside Carboxypeptidase A biosynthesis of, 88 a-chymotrypsinogen and, Gaucher's disease and, 143 sulfate derivative of, 143 biochemistry of, 577-85 synthesis of, 142 genetic aspects of, 577-79 Cerebrospinal fluid immunological aspects of, amino acids in, 380 analysis of, 379 viruses and, 584-85 biochemistry of, 379-81 cholesterol in, 379-80 serotonin and, 248-49 cholinesterases in, 381 enzymes of, 381 phospholipase B activation y-globulins of, 380 glutamine in, 380 neuraminic acid of, 380 physiological function of, neurochemistry of, 379-Charonin sulfate biosynthesis of, 356-57 adenosine triphosphate synthesis of, 83 Chelates biosynthesis of, 83, 229 amino acid synthesis and, metabolic role of, 229 186-87 Chenodeoxycholic acid biosynthesis of, 221 color reaction of, 636 leucine and synthesis of, Chitosan sulphate synthesis of, 117 mevalonate and synthesis Chloral amino acid derivatives of, 190 phosphatase action on, 29 Chloramphenicol deoxyribonucleic acid methylation of, 225, 234 biosynthesis inhibition by, 505, 507-8 biosynthesis of, 233-34 Chlorella metabolism in tumors, glycolipids in, 135-36 2-Chloroethanol hydrogen bond strengthenaction of, 65-66 ing effect of, 158 biochemistry of, 65-66 6-Chloropurine purification of, 65-66 anticancer agent, 595 6-Chlorouric acid aplastic anemia in, 402 anticancer agent, 595 Cell differentiation Cholesterol deoxyribonucleic acid and, in brain, 369-70 in cerebrospinal fluid, 379-80 metabolism of, 300 gas chromatography of Cellobiose phosphorylase side chains, 665 in microorganisms, 90 in influenza virus, 485 Cellulose in nervous tissue, 368-69 biosynthesis of, 125 Cholic acid chemistry of, 105 color reactions of, 635-36 enzymology of, 105 Choline glucose and biosynthesis biosynthesis of, 209

cytidine triphosphate reaction with, 85 deoxycytidine triphosphate reaction with, 85 incorporation into brain, 370 sulfurylation of, 97, 355 Cholineoxidase folic acid stimulation of, 445 Cholinephosphoryl transferases biochemistry of, 85 Cholinesterase brain distribution of, 381-82 in cerebrospinal fluid, 381 of ganglia, 382-83 of nervous tissue, 381-86 organophosphorous derivative of, 56 of spinal cord, 382 Chondroitin sulfate biosynthesis of, 556-57 glucose and, 298-99 Chondrosulfatase biochemistry of, 360 Chorionic gonadotropia biochemistry of, 566-67 Chromatography of amino acids, 202, 658-59 of dinitrophenyl amino acids, 202 of dinucleoside monophosphates, 468-69 of glycolipids, 131 of heptose sugars, 114 of insulin, 46 of phospholipids, 141 see also Gas chromatography Chromosomes replication of, 508-9 Chymotrypsin active fragments of, 57 acylation of, 31 acyl enzyme intermediate, 52 adsorption on glassware, 50 adsorption onto insoluble inhibitor, 48 amino acid sequence in, 55 calcium ion binding by, 51 configurational changes, 23 a-corticotropin and, 198 deuterium exchange and, 161 inhibitors of, 48 kinetics of, 36, 48 p-nitrophenol ester hydrolysis by, 37 organic solvents and, 51 organophosphorous derivatives of, 56 photo-oxidation of, 26 polymerization of, 50 salt effect on, 50 specificity of, 48 ultraviolet spectroscopy and, 164-65

Chymotrypsinogen

activation of, 54

denaturation of, 57 conformation of, 176-77 optical changes during diseases activation of, 54 hydroxyproline and Chymotrypsinogen B lysine in, 247 activation of, 54 hydroxylysine in, 226 Cinnamic acid hydroxyproline in, 226 optical rotation of, 155-56 lignin precursor, 231 Cistron structure of, 176-78 nucleic acid content of, 504 Collagenase biochemistry of, 66-67 anaerobic utilization of, 315purification of, 66 specificity of, 66, 177 16 glycine metabolism and, 207 Complement Citrovorum factor and hemolysis, 629-30 uptake of, 443 Condensing enzyme Citrulline mechanism of, 28 activation of, 84 tautomeric form of oxalphosphorolysis of, 223 acetate and, 315 Clinical biochemistry Copper bile acids in blood, 635-41 butyryl dehydrogenase magnesium metabolism, and, 261 642-48 caeruloplasmin binding of, recent developments in, 377 635-48 cytochrome oxidase content Coagulase of, 20 deoxyribonucleic acids specificity of, 54 Coenzyme binding of, 470 see specific coenzymes detection of, 378 diseases and, 378 Coenzyme A adrenal gland and, 449 in laccase, 32 biosynthesis of, 448-49 in nervous tissue, 376-79 branch chain fatty acid mevalence changes of, 32 tabolism and, 272-74 Wilson's disease and, 378 fatty acid synthesis and, Cord factor 282-83 isolation from microorganism, 133-34 hor mones and levels of, 449 a-keto acid oxidation and, structure of, 134 314-15 Corn smut malonic acid metabolism glycolipids of, 131-32 and, 275 Corticotropin biochemistry of, 557-59 microorganisms and synthesis of, 448-49 biological effects of, 558 organic synthesis of, 448 chymotrypsin action on, 198 oxalic acid metabolism phosphorylase and, 559 and, 275 structure of, 557 oxidative phosphorylation transaminase and, 559 and, 449 Corticotropin-releasing factor pantothenic acid and synisolation of, 558 Cortisone thesis of, 448-49 propionic acid metabolism deoxyribonucleic acid conand, 267-72 tent of cells and, 512 transferases transaminase levels and, 242 mechanism of, 96 Coumarin biosynthesis of, 230-31 Coenzyme Q mevalonic acid and synphenylalanine and synthesis of, 398-99 thesis of, 230 nutritional significance, Crabtree effect 398-99 causes of, 311-12 in respiratory chain, 692-94 Creatine see also Ubiquinones arginine and, 222 betaine and, 222 Cofactor enzyme combination with, 1, 3-diphosphoglycerate phos-30-32 phorylation of, 79, 222 properties of, 20-22 glycocyamine and, 222 Collagen Creatine kinase ascorbic acid and biosynsubstrate binding and, 31 thesis of, 418-19 Creatine phosphate

in diabetes, 334 Crotonase reactions catalyzed by, 261-62 Cyclo-alliin isolation of, 194 Cystathione cleavage of, 21 Cystathionine metabolism of, 225 serine and synthesis of, 225 Cysteic acid metabolism of, 353 Cysteine antibiotic thioesters of, 202 hydrogen sulfide and synthesis of, 352 kidney bean and derivatives of, 226 serine and synthesis of, 352 taurine biosynthesis and, 226 Cystine oxidation of, 192 in pancreatic juice proteins, 46-47 protein structure and, 165-66 Cytidine acid hydrolysis of, 464 protonation of, 466 Cytidine nucleotides phosphatidyl inositol synthesis and, 139-40 Cytidine triphosphate choline reaction with, 85 inositol phosphatide biosynthesis and, 86, 372-73, 431 4'-phosphopantothenyl-cysteine synthesis and, 87 ribonucleic acid activation by, 527 Cytidylyl transferases biochemistry of, 85 Cytochromes in respiratory chain, 687-89 Cytochrome -a respiratory chain and, 689-90 Cytochrome-b in respiratory chain, 688-90 Cytochrome-b5 ascorbic acid and, 418 diphosphopyridine nucleotide and, 694 Cytochrome-c mitochondrial synthesis of, 537

in respiratory chain, 691

in respiratory chain, 691

sulfite reduction and, 351

Cytochrome-c reductase

vitamin E and, 397

copper content, 20

Cytochrome oxidase

Cytochrome-c1

Cytochrome-c3

copper valence changes in, phosphatidyl inositol activation of, 141 in respiratory chain, 690-91 Cytochrome reductase substrate binding by, 27 Cytolipin H composition of, 143-44 Cytosine protonation of, 464-65 D Deacylase action of, 262-63 Deamination of ethanolamine, 208-9 of homoserine, 225 Decarboxylation of dehydroascorbic acid, 417 of histidine, 230 of 5-hydroxytryptophan, 240 of oxalsuccinate, 16 of pyruvate, 21 of succinic acid, 429 Dehydroascorbic acid decarboxylation of, 417 Dehydrogenases biochemistry of, 669-72 comparative enzymology of, 669-71 diphosphopyridine nucleotide analogues and, 671 diphosphopyridine nucleotide binding by, 23 distribution patterns, 671 fluorometry and, 671-72 tissue content of, 513 5-Dehydroquinic acid aromatic amino acid biosynthesis and, 320-21 erythrose-4-phosphate and, 320 5-Dehydroshikimle acid aromatic amino acid biosynthesis and, 320-21 Deiodination of thyroxine, 234 of triiodothyronine, 234 Denaturation of chymotrypsinogen, 57 of pepsin, 173 of ribonucleic acid, 457 of trypsin, 54 of trypsinogen, 57 Dentine ascorbic acid deficiency and,

419

ase

Deoxycholic acid

Deoxyadenosine triphosphate

in bacteriophage, 493

color reactions of, 636

in phage-infected cells,

Deoxycytidine hydroxymethyl-

Deoxycytidine triphosphate reaction with choline, 85 Deoxycytidylic acid hydroxymethylase phage infection and, 513 Deoxycitidylic acid triphosphatase phage infection and, 513 6-Deoxy-6-fluoroglucose glucose metabolism by, 324 insulin effect on uptake of, 331 2-Deoxyglucose insulin effect on fate of, 331 oxidation of, 324 Deoxyguanylate kinase in phage-infected cells, 495 Deoxynucleotide polymerase in phage-infected cells, 495 Deoxyribokinase isolation of, 308 Deoxyribonuclease in phage-infected cells, 494 Deoxyribonucleic acid alkylation of, 516-17 antigenicity of, 611 in bacteriophage \$\Phi\_X-174, 491, 503-4 in bacteriophage T2, 490 bacteriophage chromosome and, 507 bacteriophage infection and, 513-14 biosynthesis of, 83 cell differentiation and, 511-13 coding of information in, 509-10 copper binding by, 470 cortisone effect on, 512 dialysis of, 471 dielectric constant and, 471 enzymes for synthesis of, 504-5 genetic chemistry of, 503-17 α-helix stabilization in, 471 low temperature titration of, 466 and lysogeny, 508 metal ions and, 470 micrococcal nuclease hydrolysis of, 459 mitomycin and synthesis of, 507 in phage-infected cells, 496-97 protein biosynthesis by, 537-38 replication of, 506-7 ribonucleic acid synthesis and, 510-11 structural features of, 503-4 timing of synthesis of, 505-6 titration of, 470 turnover of, 505 of virus, 487

494, 513

α-γ-Diaminobutyric acid

synthesis of, 187

virus infectivity and, 476 Deoxyribonucleic acid polymerase action of, 504-5 Deoxyribonucleic acid synthesis x-irradiation and, 505 Deoxyribonucleoside triphosphates as deoxyribonucleic acid precursors, 83 Deoxyribose δ-aminolevulinic acid and synthesis of, 207 biosynthesis of, 309 glycine metabolism and, 207 phosphorylation of, 76 vitamin B12 and biosynthesis of, 442 2-Deoxyribose-5-phosphate biosynthesis of, 308 2-Deoxy sugars periodate oxidation of, 107 Dephosphorylation of ribulosediphosphate, 328 Dethiobiotin activity of, 429 Detoxication of alcohols, 353 Deuterium exchange chymotrypsin and, 161 insulin and, 160 in keratin, 162 and myoglobin, 160 peptide bond and, 160-61 protein structure and, 159-62 in ribonuclease, 161 Dextranases properties of, 303 Dextransucrase specificity of, 90 substrates of, 301 Dextrina isolation of, 123 Diabetes carbohydrate metabolism and, 333-35 creatine phosphate in, 334 glucosamine in, 334 glucose-6-phosphatase and, 333 oxalacetate and, 333 triosephosphate dehydrogenase in, 334 triphosphopyridine nucleotide and, 683-84 Diacetylmonoxime antidotal action of, 384 Diadenylic acid ribonuclease hydrolysis of, 454-55 Dialdehydes reduction of, 108 Dialysis

of deoxyribonucleic acid, 471

Diamine oxidase

histaminase and, 230

Diaminopimelic acid aspartate and biosynthesis of, 219 in glycolipids, 147 lysine metabolism and, 219-20 metabolism of, 219 pyruvate and synthesis of, 219 L-2, 3-Diaminopropionic acid isolation of, 210 2, 6-Diaminopurine anticancer agent, 593-94 Diaphorase physiological role of, 687 Diazomethane effect on glycolipids, 147 6-Diazo-5-oxo-L-norleucine anticancer agent, 599-601 Dicarboxylic acids metabolism of, 275-77 Dicyclohexylcarbodiimide inositol phosphate cyclization and, 138-39 peptide synthesis and, 190 3, 6-Dideoxyaldohexoses discovery of, 113 Diethyldithiocarbamate cerebrocuprein I reaction with, 376-77 Diglyceride phosphorylation of, 77, 373 Diglycine acetylation of, 193 Dihydroalliin isolation of, 194 Dihydrofolic acid reduction of, 443 Dihydrosphingosine biosynthesis of, 98 pyridoxalphosphate and, 98 Dihydroxyacetone phosphate glycerol-1-phosphate cycle and, 677-78 tritiation of, 29 Dihydroxy bile acid levels in jaundice, 637-39 3, 4-Dihydroxyphenylalanine metabolism of, 233 Di-isopropyl fluorophosphate pseudocholinesterase binding of, 383 Di-isopropylphosphate serine, derivative of, 24 Di-isopropyl-phosphorylthrombin purification of, 46 Diketugulonic acid metabolism of, 417 Dilatometry protein denaturation and, 159 4-Dimethylaminoazobenzene hepatoma induction by, 581 2, 2-Dimethylamino-6-hydrox-

in ribonucleic acids, 460 6, 6-Dimethylaminopurine in ribonucleic acids, 460 9, 10-Dimethyl-1, 2-benzanthracene cancer induction by, 583-84 Dimethylglycine sarcosine biosynthesis from, 6, 7-Dimethyl-8-ribityllumazine riboflavin biosynthesis and, 446 Dimethylthetin homocysteine methyltransferase distribution of, 93 Dinitrophenol oxidative phosphorylation and, 697 Dinitrophenyl amino acids separation of, 202 Dinucleoside monophosphate chromatography of, 468-69 from ribonucleic acids, 467-68 spectral properties of, 468 Dinucleotides alkaline stability of, 468-69 ribonuclease hydrolysis of, 454-55 N, N'-Diphenyl-p-phenylene diamine biological effects of, 402 1, 3-Diphosphoglycerate creatine phosphorylation by, 79, 222 2,3-Diphosphoglycerate biological role of, 313 Diphosphoglyceromutase purification of, 81, 313 Diphosphopyridine nucleotide alanine dehydrogenase and, 209 alcohol dehydrogenase binding of, 32 6-aminonicotinamide incorporation into, 427 analogues of, 427 azaserine inhibition of synthesis of, 426 binding of, 23 biological oxidations and, 672-76 biosynthesis of, 425 cytochrome-b<sub>5</sub> and, 697 dehydrogenase binding of, 23 extramitochondrial, 675-76 fatty acid biosynthesis and, 282-84 folic acid metabolism and, microsomal oxidation of, 697-98 mid-potential of, 673-75 nicotinamide and synthesis of, 425 reduction of, 20

Diptheria antitoxin purification of, 616 Disaccharide catabolism of in bacteria. 321 metabolism of, 300-3 Disease amino metabolism of, 242-50 copper and, 378 nutrition and, 406-7 Dismutation of pyruvate, 316 Disproportion of maltodextrins, 90 Dissociation constants anomalous values of, 26 Michaelis constant and, 37 Disulfide bond N-ethylmaleimide and stability of, 168 protein structure and, 165-66 in ribonuclease, 168 sodium borohydride reduction of, 168-69 stability of, 168 Disulfide interchange base catalysis of, 192-93 Dithiane ring

in antibiotic, 195

Echinomycin structure of, 195 Elastase adsorption onto elastin, 48 fractionation of, 47 organophosphorous derivative of, 57 pankrin and, 47 purification of, 46-47 specificity of, 53 elastase adsorption onto, 48 Electron affinity spectroscopy for gas chromatography, Electronic excitation of acetanilide, 193-94 Electron transfer mechanism of, 20 Electron transport non-metallic groups and, 39 in respiratory chain, 688-90 Encephalomalacia etiology of, 393-94 Endopeptidases cathepsins, 65-66 from microorganisms, 66-67 Enteroviruses structure and properties of, 487 Entner-Doudoroff pathway biochemistry of, 324 Enzymes active sites of, 24-27 bacteriophage infection

and, 513-14 of cerebrospinal fluid, 381 cofactors combinations with, 30control of synthesis, 540-

for deoxyribonucleic acid synthesis, 504-5 free radicals and, 20 glycolytic, 310 heterogeneous catalysis and, 38-39 induction of, 540-42 inhibitor combination with, 30-32 mechanism of action of,

15-44 proteolytic see Proteolytic enzymes and specific proteases repression of synthesis,

540-42 stereospecificity of, 29-30

structure of, 22-24 substrate combination and, 30-32 synthesis of

and cancer, 578 thermodynamics, 37-38 triphosphopyridine nucleotide and, 680-81 see also specific enzymes D-Enzyme

amylose biosynthesis and, 295 Enzymic catalysis

general methods, 15 **Epimerization** of L-arabinose, 112 of D-galacturonic acid, 114 of D-glucuronic acid, 114

Epinephrine glucose metabolism and, 336

glycogenolysis and, 336 lactate metabolism and, 336 metabolism of, 233 phosphorylase and, 335-

36 **Episomes** cancer and, 578

**Epoxides** of carbohydrates, 105 Ergothionine

biosynthesis of, 229 Erythrose-4-phosphate 5-dehydroquinate synthesis from, 320

photosynthesis and, 328 Esterase acyl-enzyme intermediate

and, 37 of nervous tissue, 381-86 Estradiol metabolic role of, 443 Estrogen and animal nutrition, 404 insulin and, 338-39 and transhydrogenation, 684 Estrone

sulfurylation of, 355 Ethanol amine deamination of, 208-9 Ethoxyethyne peptide synthesis and, 191 Ethylenediaminetetraace-

tate vitamin B12 absorption and 439 Ethylene oxide

reaction with nicotinamide, 427 N-Ethylmaleimide disulfide bond stability

and, 168 Exopeptidases from microorganisms, 67 Exudative diathesis etiology of, 393

a-Factor 3 liver necrosis and, 395 Fats conversion into carbohydrate, 298-90 Fatty acids acetaldehyde and biosynthesis of, 285-86 acetate and biosynthesis of, 282-87 adenosine triphosphate and biosynthesis of, 282-84 arteriosclerosis and, 661 bicarbonate and biosynthesis of, 284-85 biosynthesis of, 282-89 biotin and synthesis of, 282 branch chain acids metabolism of, 272-75 control of biosynthesis, 289 gas chromatography of, 659-64 glucose and oxidation of, 266-67 in glycolipids, 131-32 of human milk, 660 lipogenin and synthesis

of, 289 liver and oxidation of, 266-

malonyl coenzyme A and biosynthesis of, 285-86 metabolism of in brain, 373 in liver, 266-67

and, 539-40

thymine and, 597

Folic acid

in microorganisms, 265in nervous tissue, 367 oxidation of, 261-67  $\alpha$ -oxidation of, 267  $\beta$ -oxidation of, 261-62 peroxidation of, 267 polyunsaturated metabolism of, 277-82 of sebum, 659-60 of sterol esters, 660-61 structural identification of, 662-64 synthesis of, 282-90 Feed additives for livestock and poultry, 400 Felinine biosynthesis of, 226 leucine and, 226 mevalonic acid and, 226 Ferritin subunits of, 167 Ficin isopropanol and activity of, 60 kinetics of, 60 mechanism of action, 61 pH and activity of, 60 purification, 59 thiol-ester intermediate and, 61 Flame ionization detection for gas chromatography, Flavin semiquinone forms of, 20 Flavin adenine dinucleotide xanthine oxidase and, 37 Fluorescein antibody derivative, 617 Fluorescent emission spectra enzyme-substrate complexes and, 32 Fluorocitrate aconitase inhibition by, 315 Fluorokinase CO<sub>2</sub> dependence of, 77 pyruvic kinase and, 16, 268-69 Fluorometry dehydrogenases and, 671-72 p-Fluorophenylalanine protein incorporation of, 534 ribonucleic acid incorporation of, 529 5-Fluoropyrimidines anticancer agents, 596-97 Fluoropyruvate inhibition of glycolysis by,

5-Fluorouracil

β-galactosidase synthesis

aminopterin analogue of, 444-45, 598-99 anemia and, 445 ascorbic acid and metabolism of, 443 biochemistry of, 442-46 biosynthesis of, 442 choline oxidase and, 445 diphosphopyridine nucleotide and metabolism of, 444 interconversion of derivatives, 21 metabolic effects of, 444-46 metabolism of, 442-44 microorganism synthesis of, 442 pyrimethane and metabolism of, 445 vitamin B<sub>12</sub> and storage of, 441 Folic acid analogues anticancer agents, 598-99 Folic acid reductase properties of, 681 Follicle-stimulating hormone biochemistry of, 565-66 Formate activation of, 80 carbon dioxide fixation in. 326-27 effect on serine and threonine residues, 152-53 Formininoglutamic acid metabolism of, 444-45 Formininotransferase biochemistry of, 93 histidine degradation and, 93 Formylation of amylose, 113 Formylglycinamide ribotide azaserine and metabolism of, 599 10-Formyltetrahydrofolic acid metabolism of, 444 Formyltransferases biochemistry of, 93-94 Free radicals enzyme catalysis and, 20 oxidative enzymes and, Fructose amino acid derivatives of, biosynthesis of, 306-7 periodate oxidation of, 106 Fructose-6-phosphate biosynthesis of, 319 phosphoketolase and, 92

Fucose in blood group substances, 609-10 Fumarase hydrogen exchange by, 34 kinetics of, 36 trans addition of water by, 29 Fungus carbohydrates of, 105 275 pachyman in, 124-25 polyacetylenic acids in, 276 unsaturated fatty acid

oxalic acid metabolism in, biosynthesis in, 278 G Galactose ascorbic acid synthesis and, 413-14 in blood group substances, 609-10 brain lipids and, 371 in glycolipids, 135 oligosaccharides of, 119 3-Galactosidase deoxyribonucleic acid and synthesis of, 509 5-fluorouracil and synthesis of, 539-40 induction and repression of biosynthesis, 540-41 mutations and activity of, 538-39 thiouracil and synthesis of, 539-40 β-Galactoside mechanism of hydrolysis, 19 Galactoside permease induction and repression of, 540-41 D-Galacturonic acid epimerization of, 114 metabolism of, 322 Ganglia cholinesterases of, 382-83 Gangliosides in nervous tissue, 367 neuraminic acid in, 367 tetanus toxin fixation by, 144 Gas chromatography of amino acids, 658-59 biochemical applications of, 658-66 of carbohydrates, 664-65 of fatty acids, 659-64 of lipids, 659-64

methodology of, 649-58

56

capillary columns, 654-

detectors, 652-54
electron affinity spectroscopy, 656-57
monitoring of radioactive
materials, 657-58
stationary phases, 65052
recent developments of,
649-68
as-density balance

649-68
Gas-density balance
uses of, 650
Gastricin
relationship to parapep-

sins, 174
Gaucher's disease
cerebrosides and, 143
Gelatin
antigenicity of, 610

optical rotation of, 155-56 Genes

mutation of, 538-39 protein synthesis by, 537-38

Genetic lesions repair of, 517 Genetics

biochemistry of, 503-24 carcinogenesis and, 577-79

Gentiobiose biosynthesis of, 89, 302, 111-12 hydroquinone derivative

of, 302 Geomycin structure of, 196

γ-Globulins as antibodies, 614-30 of brain, 374 of cerebrospinal fluid, 380

biochemistry of, 570

biosynthesis of, 87 β-Glucan structure of, 124-25

Glucans biochemistry of, 121-25

metabolism of, 299 Glucosamine

biosynthesis of, 298 in blood-group substances, 609-10 diabetes and, 334

diabetes and, 334 Glucose

aromatic amino acid biosynthesis from, 320-21 in blood-group substances, 609-10

boric acid polymerization of, 111

brain lipids and, 371 cellulose biosynthesis and,

chondroitin sulfate synthesis and, 298-99 differential labeling and metabolism of, 680-82 fatty acid oxidation, 266-67 glucan biosynthesis from,

299 D-glucuronic acid synthesis from, 298-99,

413-14 glycine derivative of, 195 glycogen biosynthesis from, 297

in glycolipids, 132, 135 hyaluronic acid synthesis

from, 298-99
L-iduronic acid synthesis

and, 298-99 lactation and oxidation of, 319

metabolism of, 303-6 in adipose tissue, 683 6-deoxy-6-fluoroglucose, 324

in diabetes, 683-84 diet effect on, 303-4 epinephrine effect on,

336 glucuronic acid pathway, 321-22

321-22 in liver, 682-83 mammary gland, 683 pentose phosphate pathway, 318-20 photosynthesis and, 327 in pituitary, 304 shikimic acid biosynthesis and, 320-21

x-ray effect on, 306 mucopolysaccharide biosynthesis from, 298 oligosaccharides of, 119 oligosaccharide synthesis

from, 118 in phage-infected cells, 495

phenylalanine synthesis and, 320-21 in phosphatidyl inositol

derivative, 142 pituitary and metabolism of, 304

polymerization of, 111 trehalose biosynthesis from, 300

in ustilagic acids, 132 D-[3-14C]Glucose synthesis of, 114

Glucose-6-phosphatase activity in diabetes, 333 mechanism of, 33

Glucose-1-phosphate glycogen biosynthesis and, 297

Glucose-6-phosphate ascorbic acid synthesis and, 417 metabolism of, 304 oxidation of, 319 periodate oxidation of, 107 Glucose-6-phosphate dehydrogenase

properties of, 670 Glucosylation of 5-hydroxymethylcyto-

sine, 513 D-Glucuronate reductase properties of, 681

D-Glucuronic acid epimerization, 114 glucose and synthesis of, 298-99

metabolism of, 321-22 D, L-Glucuronic acid biosynthesis from inositol, 430

Glucuronic acid pathway ascorbic acid synthesis and, 413-17

biochemistry of, 321-24 Glucuronides biosynthesis of, 300-1 of serotonin, 240

D-Glucuronolactone ascorbic acid synthesis and, 415 Glutamate

acetate incorporation, 212 hydroxyproline as precursor, 227 metabolism of, 211-15

metabolism of, 211-15 acetate labeling of, 212 by intestinal bacteria, 213 mesaconate biosynthesis

and, 211
Glutamic acid
vitamin-B<sub>6</sub> deficiency and,
423

Glutamic decarboxylase activity of, 214 brain metabolism and, 420-21

420-21 microradiometric assay for, 216

Glutamic dehydrogenase adenosine nucleotide inhibition of, 213 inhibition of, 213

kinetics of, 36 properties of, 670, 681 urea inhibition of, 213

Glutamic-oxaloacetic transaminase purification and properties

of, 241 Glutaminase active sites of, 214

Glutamine amination of xanthosine monophosphate and, 87 antibiotic-N-substituted

derivatives of, 202 azaserine antagonism and, 599 Kreb's cycle intermedi-

serine metabolism and,

of, 207

ates and, 207

biosynthesis of, 18 brain levels of, 214 in cerebrospinal fluid, 380 hexosamine synthesis and, incorporation into protein of, 529 synthesis of, 187 thermodynamic values of, 214 Glutamine synthetase metal ion requirements of, 214 phosphate incorporation into, 31, 34 Glutaric acid metabolism of, 276 Glutathione glyoxalase reaction and, 28 penicillamine analogue of, 201 protein synthesis and, 531 review of, 347 role of, 22 Glutathione disulfide reductase properties of, 681 Glyceraldehyde-1-phosphate dehydrogenase properties of, 670 Glyceraldehyde-3-phosphate dehydrogenase acylation of, 31 Glycerol in glycolipids, 135-42 glycosides of, 135-36 Glycerol-1-phosphate biological oxidation of, 676from phosphatidyl inositol, 136 Glycerol-1-phosphate cycle dihydroxyacetone phosphate and, 677-78 lactic acid and, 677 reaction sequence of, 677-Glycerol-1-phosphate dehydrogenase absence of in tumors, 677 properties of, 670 Glycerol phosphatide glycolipid and, 136-42 Glycine activation of, 81 deoxyribose biosynthesis and, 107 glucose derivative of, 195 metabolism of, 207-9 aminoacetone biosynthesis and. 211 citrate as precursor, 207 deoxyribose precursor, 207

enzymatic reduction

uric acid and, 208 serine synthesis from, 208 Glycine reductase quinone requirements of, 207 Glycocyamine as creatine precursor, 222 Glycogen biosynthesis of, 77, 87 enzyme action on, 124 glucose-1-phosphate metabolism and, 297 isolation of, 123 metabolism of, 297-98 phosphorylase and biosynthesis of, 297 sex hormones effect on, 338-39 Glycogenolysis epinephrine and, 336 Glycolate and photosynthesis, 327-28 Glycolipids aggregation of, 131 analysis of, 131 biochemistry of, 131-50 carbohydrate esters of, 131-35 of chlorella, 135-36 chromatography of, 131 complex, 147 of corn smut, 131-32 diaminopimelic acid in, 147 diazomethane effect on, 147 fatty acids of, 131-32 galactose in, 135 glucose in, 132, 135 glycerol in, 135-42 glycerol phosphatides in, 136-42 glycosides in, 135-36 long-chain bases of, 142 of microorganisms, 146 phosphatides in, 136-42 in plants, 144-46 solubility of, 131 of wheat, 135 Glycolysis aerobic inhibition of, 310-12 biochemistry of, 309-13 Crabtree effect on, 311-12 distribution of enzymes for, 310 fluoropyruvate inhibition of, 309 phosphocreatine and, 309

Glycosulfatase

biochemistry of, 361 of mollusc, 361 Glycosylamine acid hydrolysis of, 463 Glycosyltransferase biochemistry of, 87-93 Glyoxalase glutathion and, 28 mechanism of, 28 metabolic role of, 211 Glyoxa late cycle fatty acid carbohydrate conversion and, 289-90 Glyoxylate reaction with oxalacetate, 315 Gonadotropins biochemistry of, 564-67 Gramacidin S synthesis of analogues of, 200 Growth hormone anti-insulin effect of, 337-38 carbohydrate metabolism and, 337-38 see also Somatotropin Guanidination of papain, 63 Guanidine metabolism of, 222-24 y-Guanidinobutyrate y-aminobutyrate and synthesis of, 217 in brain, 217 Guanidino group protection of, 188 Guanine alkylation of, 465-66 protonation of, 464-65 Guanosine monophosphate biosynthesis of, 86 Guanosine-3'-phosphate taka-diastase and, 457 Guanosine triphosphate amino acid transfer and, 530 L-Gulonic acid ascorbic acid synthesis and, 414-15 biosynthesis from inositol, 430 metabolism of, 322-23 H

Hapten antibody combination with, 625-26 steroids as, 611 Hartnup's syndrome aminoaciduria and, 250 HeLa cells herpes virus infection of, 487 σ-Helix protein structure and, 154-64

Hemaglutinins

of viruses, 484, 486 Hemoglobin abnormal types of, 175biosynthesis of, 536 structure of, 174-76 titration of, 174-75 x-ray diffraction studies on, 166 Hemolysin of mumps virus, 486-87 Hemolysis complement and, 629-30 Heparin biosynthesis of, 298, 355-99 57 Hepatoma 4-dimethylaminoazobenzene induction of, 581 Heptoses paper chromatography of, 114 Herpes virus properties of, 487 Hexokinase 1,5-anhydro-D-glucitol-6phosphate inhibition of, 75 2-C-hydroxymethylglucose inhibition of, 312 insulin action and, 329 properties of, 312 Hexosamine glutamine and synthesis of, 298 Hexose phosphate isomerase mechanism of, 28 Hexoses biosynthesis of, 306-7 metabolism of, 303-6 Histaminase diamine oxidase and, 230 Histidase thiamine deficiency and, 448 Histidine active site and, 25 carboxymethylation of, 170 formiminotransferase and, 93 metabolism of, 228-30 decarboxylation of, 230 products of, 228 as purine precursor, 228 p-nitrophenylacetate hydrolysis by, 193 photo-oxidation of, 26 Histocompatibility cancer and, 579-80 Histones

in nucleus, 512

from, 225

cystathionine formation

Homocysteine transmethylase

Homocysteine

characteristics of, 224 Homograft reaction and cancer, 579-80 Homoserine cleavage of, 21 deamination of, 225 Homoserine kinase threonine inhibition of, 210 Hoof-and-mouth disease virus properties of, 487 Hormones carbohydrate metabolism and, 329 chemistry of peptide, 197chorionic gonadotropin, 566-67 coenzyme A levels and, 449 corticotropin, 557-59 follicle-stimulating, 565glucagon, 570 insulin, 568-70 intermedins, 553-57 interstitial cell-stimulating, 564-65 neural, 547 oxytocin, 548-53 pregnant mare serum gonadotropin, 567 prolactin, 563-64 protein, 547-76 somatotropin, 561-63 thyrotropin, 559-61 vasopressin, 548-53 Hyaluronic acid biosynthesis from glucose, 298-99 Hyaluronidase and vasopressin, 553 Hydantoin-1-propionate in urine, 228 Hydrazinolysis of ribonucleic acids, 456 Hydrocarbons biological oxidation of, 265-66 Hydrogenation of amygdalin, 112 of phenylhydrazones, 116 Hydrogen bond 2-chloroethanol effect ca, 158 in poly-D, L-alanine, 160-61 Hydrogen exchange fumarase and, 34 Hydrogen sulfide biosynthesis of in yeast, 351-52 cysteine biosynthesis and, 352 Hydrolysis of glycosylamines, 463 inclusion compounds and, 39

of isocytidine, 464 of laminarin, 113 of nucleic acids, 467-69 of phytin, 137 of ribonucleic acids, 467-69 of ribosylimidazoles, 464 of triglycerides, 193 Hydropericardial disease etiology of, 406-7 Hydrophobic bond in poly-D, L-alanine, 161 Hydroquinone gentiobiose derivative of, 302 Hydroxyamino acids acvl shift and, 152-53 β-Hydroxy-γ-aminobutyric acid in brain, 217 3-Hydroxyanthranilic acid conversion to nicotinic acid, 424 as tryptophan metabolite, 236-37 Hydroxyanthranilic oxidase vitamin K and, 237 Hydroxyaspartic acid metabolism of, 212 transcarbamylation and, 212 β-Hydroxybutyrate oxidation of, 263 photosynthesis and, 263racemization of, 262 β-Hydroxybutanyl dehydrogenase properties of, 262 5-Hydroxyindole biosynthesis of, 239-40 metabolism and malignant carcinoid, 248-49 tryptophan metabolism and, 239-40 β-Hydroxyisovalerate metabolism of, 273 Hydroxylamine brain metabolism and, 420-21 ribonucleic acids inactivation by, 481-82 thioester reaction with, 262 Hydroxylation by molecular oxygen, 29 norepinephrine biosynthesis and, 233 of phenylalanine, 21 of proline, 226 Hydroxylysine metabolism of, 220 origin of, 226 5-Hydroxymethylcytosine glucosylation of, 513 Hydroxymethyldeoxycytidine

triphosphate

as deoxyribonucleic acid precursor, 83 Hydroxymethyldeoxycytidylate phosphorylation of, 75 Hydroxymethyldeoxycytidylate kinase phage infection and, 513 2-C-Hydroxymethylglucose hexokinase inhibition by, β-Hydroxy-β-methyl-glutaryl-coenzyme A biosynthesis of, 91 metabolism of, 274 β-Hydroxy-β-methyl-glutaryl coenzyme A reductase properties of, 681 Hydroxymethyltransferase biochemistry of, 93-94 5-Hydroxymethyluracil spectrum of, 461 O-Hydroxyphenylacetic acid biosynthesis of, 232 phenylketonuria and, 246 p-Hydroxyphenylpyruvic oxidase substrate inhibition of, 232 Hydroxyproline ascorbic acid and, 419 collagen diseases and, 247 glutamate and metabolism of, 227 ketoproline conversion to, Marfan's syndrome and urine content of, 247 metabolism of, 225-28 origin of, 226 **β-Hydroxypropionate** metabolism of, 269, 271 Hydroxypyruvate metabolism of, 317 Hydroxypyruvic acid oxidase ascorbic acid effect on, 417-18 2-Hydroxystearate phrenosine and, 367 5-Hydroxytryptophan decarboxylation of, 240 5-Hydroxyuridine

urine content of, 247 metabolism of, 225-28 origin of, 226 β-Hydroxypropionate metabolism of, 269, 271 Hydroxypyruvate metabolism of, 317 Hydroxypyruvate acid oxidase ascorbic acid effect on, 417-18 2-Hydroxystearate phrenosine and, 367 5-Hydroxytryptophan decarboxylation of, 240 5-Hydroxyuridine β-galactosidase synthesis and, 539-40 as nucleic acid antimetabolite, 224 Hygromycin B D-talose in, 114 Hyperglycemia effect on hepatic glucose output, 304 Hyperkeratosis etiology of, 406 Hypertensin analogues of, 201 Hypoglycemia arylsulfonamides and,

334-35 biguanidines and, 335 Hypoglycemic drugs mode of action, 334-35 Hypoglycine B synthesis of, 196 Hypophysectomy carbohydrate metabolism and, 337-38 Hypotaurine in molluscs, 226 Hypothalamus hormones of, 558, 561 L-Iduronic acid synthesis from glucose, 298-99 Imido esters amino group reaction with, 193 Immunochemistry antibodies, 614-25 antigen, 609-14 antigen-antibody interaction, 625-30 complement and hemolysis, 629-30 recent developments in, 609-34 Immunology and carcinogenesis, 579-84 Immunopolysaccharides antigenicity of, 609-10 of microorganisms, 610 Inclusion compounds hydrolysis and, 39 Indole biosynthesis of, 235 Indoleacetic acid biosynthesis of, 238-39 tryptophan metabolism and, 238-39 Indolylpyruvate isomerization of, 22 Influenza virus cholesterol in. 485 host material in, 485-86 interferon and, 486 lecithin in, 485 neuraminidase activity of, process of infection, 486 structure of, 484 Infrared spectroscopy of amino acids and peptides, 194 Inosinic acid biosynthesis of, 79

6-mercaptopurine and

in nervous tissue, 368

biochemistry of, 430-32

assay for, 432

Inositides

Inositol

metabolism of, 592

cyclic phosphate ester of, 137 D. L-glucuronic acid biosynthesis and, 430 in glycolipids, 136-42 L-gulonic acid synthesis and, 430 isomytilitol antagonism to, 140 1,2-isopropylidene derivative of, 136-37 metabolism of, 323-24 430-31 phosphate esters of, 137-38 phosphatides, 431-32 phosphorylation of, 76 stereochemistry of, 136-37 Inositol phosphate cytidine triphosphate and biosynthesis of, 86, 372-73, 431 dicyclohexylcarbodiimide cyclization of, 138-39 Inositol phosphatide acetyl choline and biosynthesis of, 431 biosynthesis of, 86 phospholipase B activation of, 431 Insulin biochemistry of, 568-70 carbohydrate metabolism and, 329-33 cell permeability and, 330-31 chromatography of, 46 6-deoxy-6-fluoroglucose uptake and, 331 2-deoxyglucose uptake and, 331 deuterium exchange and, 160 estrogen and, 338-39 growth hormone and, 337-38 hexokinase and, 329 ionic ratios and, 332 isolation of, 568 liver metabolism and, 332-33 mode of action of, 329-30, 569-70 pentose phosphate pathway, 329-30 pinocytosis, 331 structure of, 568-69 sulfhydryl compounds and, triphosphopyridine nucleotide system and, 329-30 ultraviolet spectroscopy and, 162-65 Insulinase characterization of, 569 Interferon

influenza virus and, 486

### SUBJECT INDEX

Intermedins biochemistry of, 553-57 biological effects of, 550 isolation of, 553-54 structure of, 554 Interstitial cell-stimulating hormone biochemistry of, 564-65 Intrinsic factor vitamin B<sub>12</sub> absorption and, Invertage transglycosidation reaction of, 301-2 Iodine elimination of in rat, 234 Ionization heat of, 26 Irradiation antibody formation and, 621-22 Isoantibodies definition of, 619 Isocitrate aconitase and, 29 configuration of, 29 oxidation of, 16 Isocitric dehydrogenase properties of, 670 Isocitritase action in molds, 207 activity of, 318 distribution of, 290 Isocytidine acid hydrolysis of, 464 Isoleucine activation of, 525 biosynthesis of from a-aceto-a-hydroxybutyrate, 220 from acetylethylcarbinol and, 220-21 metabolism of, 220-22 Isomaltose synthesis of, 111-12 Isomerization of carbohydrates, 27 of indolylpyruvate, 22 of maleylacetoacetate, 22 of \(\beta\)-methylaspartate, 22 of methylmalonate, 22 Isomytilitol as inositol antagonist, 140 Isoniazid effect on vitamin B6, 241-42 Isopentenylpyrophosphate active isoprene unit, 98 biosynthesis of, 79 Isoprene activation of, 98 Isopropanol ficin activity and 60 Isopropylidene inositol derivative, 136-37 Isopyridoxal

vitamin-Bg metabolism and,

422 Isotopic exchanges enzyme action and, 33-35 Isozyme definition of, 669

J

Jaundice dihydroxy bile acids and, 637-39 serum transaminase levels in, 243 trihydroxy bile acids in, 637-39

K

Kanamycin structure of, 115 Keratin deuterium exhange and, 162 α-Keto acid oxidation coenzyme A and, 314-15 lipoic acid and, 314-15 Ketone bodies formation of, 263 liver excretion of, 263 2-Keto-3-deoxyheptonic acid biosynthesis of, 308 shikimic acid synthesis from, 321 2-Keto-4, 5-dihydroxy valeric acid biosynthesis from L-arabinose, 308 2-Ketogluconate metabolism of, 324 α-Ketoglutarate y-aminobutyrate reaction with, 315 oxidation of, 314-15 3-Keto-L-gulonic acid metabolism of, 415 2-Keto-L-gulonolactone ascorbic acid synthesis and, 414-15 a-Ketoisovaleric acid valine metabolism and, 221 Ketoproline hydroxyproline and, 228 metabolism of, 228 Keturonic reductase action of, 321-22 Kidney tricarboxylic acid cycle in, 313-14 Kidney beans cysteine derivatives in, 226 Kinases see Phosphotransferases Kinetics enzyme mechanisms and, 35-37 historical development of, 35 Koenigs-Knorr reaction

improvements in, 118
Kojibiose
synthesis of, 118
Kwashiorkor
amino acid levels
in blood, 244
Kynureninase
vitamin B<sub>6</sub> and, 422
Kynurenine
tryptophan metabolism and,
236-37
urine and derivatives of,
424-25
Kynurenine hydroxylase
properties of, 681

L Laccase copper valence changes in, 32 Lactation glucose oxidation during. 319 Lactic acid epinephrine and metabolism of, 336 glycerol-1-phosphate cycle and, 677 metabolism of, 317 Lactic dehydrogenase distribution of, 313, 669 kinetics of, 30 properties of, 670 Lactonase action of, 323 Lactose biosynthesis of, 118, 300 Laminaribose synthesis of, 118 Laminarin hydrolysis of, 113 structure of, 124 Lanosterol formation of, 27 Lanthionine-S-oxide  $\beta$ -elimination reaction of, 192 Lathyrism  $\beta$ -aminopropionitrile and, 247 Lecithin biosynthesis of, 85 fatty acids of, 661 in influenza virus, 485 phospholipase action on, 141, 432 Lectins agglutination and, 629 Leucine analogues of, 202, 221 carotene biosynthesis and, felinine formation from, 226 metabolism of, 220-22 mevalonic acid biosynthesis and, 221

416

556

406

193

508

45

643

Malic acid

serum levels of, 645

isomerization of, 22

biosynthesis of, 326

Maleylacetoacetate

Lysine

new natural derivatives of, 197 Leukemia causes of, 588-89 nucleic acids and, 588 polyoma virus and, 588 vitamin B<sub>12</sub> and, 440 Levans enzymology of, 105 Lignin biosynthesis of, 231 cinnamic acid and synthesis of, 231 tyrosine and biosynthesis of. 231 Linoleic acid metabolism of, 278 Linolenic acid metabolism of, 280 Lipid alanine and biosynthesis of, 210 chemistry of review on, 261 gas chromatography of, 659-62 metabolism of, 261-94 of nervous tissue chemistry of, 365-68 metabolism of, 368-74 neurochemistry and, 365-74 physiological problems of review of, 261 in Rous sarcoma virus, 487 sulfurylation of, 357 tetanus toxin and, 144 vitamin B<sub>12</sub> and metabolism of, 440-41 Lipogenin fatty acid synthesis and, 289 Lipoic acid a-keto acid oxidation and, 314-15 review of, 347 role of, 22 vitamin-C activity of, 419-Lipoic dehydrogenase action of, 687 Lipopolysaccharides of bacteria, 146 fever induction by, 146 Liver α-factor 3 and necrosis of, 395 fatty acid oxidation in, 266-67 flucose metabolism in, 682-83 hyperglycemia in, 304 insulin effect in on metabolism, 332-33 ketone substance excretion by, 263 necrosis of, 391-92, 394

oxalacetate in, 333

oxidative phosphorylation in,

266-67 excretion of, 313-14 Livestock nutrition of, 399-406 Lombricine isolation of, 194 D-serine in, 208 Lycorine ascorbic acid synthesis and, Lymphomatosis virus of, 585 D-Lysergic acid diethylamide intermedin secretion and, effect of radiation on, 193 metabolism of, 219-20 in bacteria, 219-20 diaminopimelic acid and, 219-20 melanine and, 220 pipecolic acid formation from, 220 racemization of, 220 penicillin and absorption of, triglyceride hydrolysis by, Lysogeny deoxyribonucleic acids and, Lysolecithin solubilization of brain homogenates, 374, 385 Lysophosphatides plasmalogen metabolism and, 371 Lysozyme acyl shift in, 152 amino acid sequence in, 24, 170-71 in bacteriophage, 492 peptide bond cleavage in, 153-54 structure of, 170-71 Magnesium clinical importance, 646 deficiency in animals, 644deficiency in man, 645-56 deoxyribonucleic acids binding of, 470 metabolism of, 642-48 analytical methods, 642-43 excretion of, 643-44 radioactive isotope studies, oxidative phosphorylation and, 695-96

metabolism of, 316 reabsorption of, 313-14 Malic dehydrogenase properties of, 670 Malic enzyme biotin and, 430 carbon dioxide fixation and, 325 mechanism of, 17 properties of, 681 Malic synthetase assay method for, 91 Malnutrition amino acid blood levels in, 244 selenium and, 391-94 Malondialdehyde oxidation of, 110-11 Malonic acid coenzyme A and, 275 metabolism of, 275, 316 Malonic semialdehyde  $\beta$ -alanine biosynthesis from, 210 metabolism of, 275 Malonyl coenzyme A fatty acid biosynthesis and, 285-86 Maltodextrins disproportion of, 90 Mammary gland glucose metabolism in, 683 Mannitol biosynthesis of, 307 C-[14C] Mannitol synthesis of, 114 Mannose in phosphatidyl inositol derivative, 141-42 Marchi reaction chemical basis of, 368 Marfan's syndrome hydroxyproline peptides in urine and, 247 Mass spectroscopy of peptides, 183-84 Melanoma tyrosine metabolism and, 247 Melanophore-stimulating hormones isolation of, 198 synthesis of, 198 see Intermedins Melilotic acid biosynthesis of, 230 Menadione (Vitamin K3) oxidation of, 691 Mental deficiency argininosuccinate excretion and, 376 Mercaptalbumin dimerization of, 158 6-Mercaptopurine adenylic acid biosynthesis

and, 592 adenylosuccinate metabolism and, 592 anticancer agent, 590-92 immunological unresponsiveness and, 623 Mesaconic acid biosynthesis of, 211 L-glutamate and synthesis of. 211 Metabolic pools and protein biosynthesis, 532-33 Metal ions deoxyribonucleic acids and, 470 glutamine synthetase and, insulin effect on, 332 and nucleic acids, 469-71 peptide complexes of, 193 Methane bacterial oxidation of, 266 Methionine alkylation of, 168-69 biosynthesis from sulfide, 352 for miminoglutamic acid metabolism and, 445 incorporation into brain protein, 375 metabolism of, 224-25 review of, 347 vitamin B12 biosynthesis and, 437 2-Methyladenine in ribonucleic acids, 460 α-Methyl-β-alanine absolute configuration of, 195 2-Methylamino-6-hydroxypurine in ribonucleic acids, 460 6-Methylaminopurine in bacteriophage T2, 490 in ribonucleic acids, 460 β-Methylaspartic acid enzymatic resolution of, 192 isomerization of, 22 vitamin B<sub>12</sub> biosynthesis of, 440 Methylation of catechols, 225, 234 of cephalin, 209 Methylcholanthrene sarcoma induction by, 580 8-Methyl crotonate metabolism of, 273-74 β-Methylcrotonyl coenzyme biotin and carboxylation of, 273 B-Methylcrotonyl coenzyme

A carboxylase biotin and mechanism of,

428 S-Methylcysteine occurrence of, 226 S-Methylcysteine sulfoxide isolation of, 194 2-Methyl-diaminopurine anticancer agent, 593-94 N-Methyl-formamide antimetabolite activity of, 598 Methyl-glucopyranoside periodate oxidation of, 107 Methyl glutaconase action of, 273 1-Methylguanine in ribonucleic acids, 460 Methylhistidinuria vitamin E and, 230 Methylmalonate isomerization of, 22 metabolism of, 267-68 succinate and, 267-68 O-Methylpherase substrates of, 234 N-Methyl-4-pyridone-5carboxamide metabolite of nicotinic acid, 426 Methylribofuranoside-2,3 cyclic phosphate pancreatic ribonuclease and, 454 2'- (or 3') O-Methylribose from ribonucleic acids, 469 Methylthioadenosine formation of, 224-25 Methyl transfer S-adenosylmethionine and, 93 Methyltransferase biochemistry of, 93 specificities of, 93 Methylviologen sulfate reduction and, 349-51 Mevalonic acid biosynthesis of, 274 as carotene precursor, 221 coenzyme Q biosynthesis and, 398-99 felinine formation from, 226 incorporation into brain, 373-74 leucine and synthesis of, 221 phosphorylation of, 78 squalene biosynthesis from, 27 Micrococcal nuclease purification and specificity of, 458-60 Microorganisms acetylenic acids in, 276-

D-alanine in, 209 carbon dioxide fixation in cellobiose phosphorylase in. 90 coenzyme A biosynthesis in, 448-49 cord factor in, 133-34 disaccharide metabolism in, 321 endopeptidases of, 66-67 endotoxin lipopolysaccharides of, 113 exopeptidases of, 67 fatty acid metabolism in, 265-66 folic acid biosynthesis in, 442 glutamate metabolism by, 213 glycolipids of, 146 hydrocarbon oxidation by, 265-66 immunopolysaccharides of, 610 induction and repression in. 540-42 intestinal metabolism of, 213 lipopolysaccharide in, 146 lysine metabolism in, 219-20 methane oxidation by, 266 nicotinic acid metabolism in, 426 photosynthesis in, 263-64 polyesters in, 264-65 propionic acid metabolism in, 270-71 proteinases of, 66-67 riboflavin metabolism in, 446 sulfate reduction in, 349-50 sulfite reduction in, 351 thiamine biosynthesis in, 447 thiosulfate reduction by, 351-52 unsaturated fatty acid biosynthesis in, 281-82 vitamin B6 inhibitors and, 421-22 vitamin B<sub>12</sub> assay with, 437 Microsomes biological oxidations in, 697-98 diphosphopyridine nucleotide oxidation in, 697oxidation in, 697-98 protein biosynthesis in, 536 Mille

6-O-acetyl-D-glucose in,

human fatty acids of, 660 Mitochondria acetoacetate oxidation of, 263 biological oxidations in, 684-87 cytochrome-c synthesis and, 537 protein biosynthesis in, 537 pyridine nucleotide content of. 672-73 vitamin B<sub>12</sub> effect on, 441 Mitochrome and oxidative phosphorylation, 696 Mitomycin deoxyribonucleic acid biosynthesis and, 507 effect in phage-infected cells, 496 Model substrate reactions amino acid catalysis of, 193 Molds isocitritase in, 207 Molluscs glycosulfatase of, 361 hypotaurine in, 226 Monoamine oxidase characteristics of, 240 substrates for, 233 Monosaccharides chemistry of, 113-14 Mouse milk tumor virus properties of, 488 Mucopolysaccharide glucose metabolism and,

298 metabolism of, 298-99 sulfurylation of, 355 Mucopolysaccharide sulfatases biochemistry of, 360 Mumps virus hemolysin in, 486-87 Mung bean sugars of, 113-14 Muscle etiology of diseases of, 392-93 Mushroom toxic peptides of, 196-97 Mutation

and protein biosynthesis, 538-39 ribonucleic acids and, 518-19 Mycobacterium tuberculosis glycolipids of, 133-34

2-aminopurine and, 515 biochemistry of, 514-16

5-bromouracil and, 515

Mycolic acids in cord factor, 134 Myelin biosynthesis of, 368-69 neurokeratin of, 367-68 vitamin B<sub>12</sub> effect on, 441 Myeloblastosis virus of, 585 Myocardial infarction

Myocardial infarction serum transaminase levels in, 243 Myoglobin

deuterium exchange and, 160 x-ray diffraction studies on, 166

Myosin reaction with water, 32 Myrosulfatase biochemistry of, 361

Necrosamine

Myxoviruses structure and properties of, 484-87

N

structure of, 146 Nemotinic acid biosynthesis of, 276 Neo-chymotrypsins formation of, 54 Neomycin structure of, 115 Nervous tissue acetate metabolism in, 372 cholesterol in, 368-69 cholinesterases in, 381-BR. copper in, 376-79 esterases of, 381-86 fatty acids of, 367 inositides in, 368 lipids in, 365-74 plasmalogens in, 365-66 proteins in, 374-76 proteolipids in, 367-68 sphingolipids of, 366-67 Neural hormone biochemistry of, 547 Neuraminic acid of cerebrospinal fluid, 380 in gangliosides, 367 structure of, 115 Neuraminidase in influenza virus, 486 properties and action of, 303 Neurochemistry of cerebrospinal fluid,

379-81 cholinesterases and, 381-86 copper metabolism and, 376-79

376-79
esterases and, 381-86
lipids and, 365-74
proteins and, 374-76
recent developments of,
365-90

Neurohypophyseal hormones biochemistry of, 548-53 Neurokeratin histochemical studies of, 367-68 of myelin, 367-68 Niacin biosynthesis of, 238 see Nicotinic acid Nicotinamidase purification of, 426 Nicotinamide adenine biosynthesis and, 208 diphosphopyridine nucleotide synthesis and, 425

tide synthesis and, 42: ethylene oxide reaction with, 427 Nicotinamide-N-oxide biological role of, 426 Nicotinic acid biochemistry of, 424-27

diphosphopyridine nucleotide and, 425-26 3-hydroxyanthranilate conversion to, 424

version to, 424 metabolism of, 237, 426-27

N-methyl-4-pyridone-5carboxamide and metabolism of, 426 microorganisms and meta-

bolism of, 426 tryptophan metabolism and, 235-38, 424-25

Nigerose synthesis of, 118 p-Nitrophenol ester chymotrypsin hydrolysis of, 37 p-Nitrophenylacetate

histidine hydrolysis of, 193 p-Nitrophenyl-\alpha-(4-imidazolyl) butyrate

as a model for proteolytic mechanism, 58 p-Nitrophenyl phosphate enzymatic hydrolysis of,

p-Nitrophenyl sulfate sulfate reduction and, 349-50

Nitrous acid and mutations, 515-16 ribonucleic acids reaction with, 518-19 virus

action in, 478-79
Norepinephrine
biosynthesis of, 233
Norleucine
incorporation into protein,
534

Noviose structure of, 114 Nuclear magnetic resonance spectrum

Odyssic acid

Oleic acid

82

Oligosaccharides

metabolism of, 276

biosynthesis of, 278, 280-

biochemistry of, 117-21

of 5-ribosyluracil, 461 biosynthesis of, 120-21 and pyrazolylalanine strucof galactose, 119 ture, 194 nomenclature of, 105 occurrence of, 119-20 preparation of, 111-12 Nucleases micrococcal, 458-60 ribonucleases, 453-58 raffinose in, 119 Nucleic acid synthesis of, 118-19 biosynthesis of Ommochrome pigments in amoeba, 510-11 composition of, 238 charges on, 470 Optical rotation chemical hydrolysis of, of collagen, 155-56 467-69 of fibrous proteins, 155 cistron content of, 504 of gelatin, 155-56 interactions with ions. of globular proteins, 156 469-71 of poly-L-glutamic acid, leukemia and, 588 154 micrococcal nuclease and, of polypeptides, 154-55 458-60 minor constituents of, 460-63 Organophosphorous comnucleoside hydrolysis and, tion with, 56 463-64 protonation of, 464-66 Orinase recent developments conmode of action, 335 cerning, 453-74 Ornithine regulation of synthesis, synthesis of, 187 224 Ornithine transcarbamylase ribonucleases, 453-58 biotin and synthesis of, sequence determination in, 224 460 properties of, 223-24 synthesis of, 82 Orotidine Nucleolus 6-azauracil antagonism, 595-96 ribonucleic acids synthesis and, 510 Osazone Nucleoside phosphorylase mechanism of formation. tumor drug resistance and, 114 591 Oscarosides Nucleosides isolation of, 135 hydrolysis of, 463-64 Oxalacetate Nucleotides in diabetic livers, 333 interconversions of, 74 glyoxylate reaction with, terminal, 527 315 Nucleotide pyrophosphorylreactive tautomer, 91 tautomeric forms of, 315 ase tumor drug resistance and, Oxalacetate carboxylase 590-91 biotin and, 20 Oxalacetic decarboxylase Nucleus histones of, 512 biotin and, 430 Nutrition carbon dioxide fixation animal diseases and, 406-7 and, 325 benzoquinones and, 398-99 Oxalic acid of livestock and poultry, coenzyme A and, 275 399-406 metabolism of, 275 recent developments in, fungus and, 275 391-412 selenium and, 391-98 and, 275 vitamin E and, 391-98 Oxalsuccinate decarboxylation of, 16 Oxazolidones

of y-aminobutyrate, 217 of cadaverine, 230 of carbohydrates, 106-11 of citrate, 16 of cystine, 192 of 2-deoxy-D-glucose, 324 of 2-deoxysugars, 107 of fatty acid, 261-67 of fructose, 106 of glucose-6-phosphate, 319 of β-hydroxybutyrate, 263 of a-ketoglutarate and, 314-15 of malondialdehyde, 110-11 of menadione, 691 of pipecolic acid, 220 protein structure and, 154of putrescine, 230 of pyruvate, 314-15 of spermidine, 230 pounds chymotrypsin reacof spermine, 230 of succinate, 688-90 see also Biological oxidation see also Periodate oxidation see also Photo-oxidation α-Oxidation of fatty acids, 267 β-Oxidation of fatty acids, 261-62 reversal of, 282 Oxidative enzymes free radicals and, 32 Oxidative phosphorylation adenosine diphosphate and, 696-97 adenosine diphosphateadenosine triphosphate exchange and, 34 adenosine triphosphate and, 679 adenosine triphosphate labeling during, 29 albumin effect on, 696 biochemistry of, 694-97 coenzyme A and, 449 coupling and uncoupling of, 696 dinitrophenol and, 697 magnesium and, 695-96 mechanism of, 696-97 mitochrome and, 696 respiratory control and, thiamine pyrophosphate 694-95 uncoupling in cold-fasted rat liver, 266-67 Oximes antidote for anti-cholinpeptide synthesis and, 190 esterases, 384 Oxazolines Oxybiotin acyl shift and, 152 activity of, 429 Oxidases Oxygen mixed function hydroxylation by, 29 properties of, 681 Oxytocin Oxidation activity of, 550-53 of agmatine, 230 analogues of, 550-51

### SUBJECT INDEX

biochemistry of, 548-53 chemical synthesis of, 197-98 comparative biochemistry of. 197 isolation and purification of, 548-49 metabolism of, 552 structure of, 549-50 synthesis of analogues of, 200-1 Oxytocinase action of, 552

Pachyman from fungus, 124-25 Palmityl coenzyme A reductase properties of, 681 Pancreas ribonuclease of, 453 Pancreatic hormones biochemistry of, 568-70 Pancreatic juice cystine incorporation into, 46-47 fractionation and composition of, 46-47 Pankrin and pankrinogen elastase and, 47 Pantothenic acid ascorbic acid biosynthesis and, 448 biochemistry of, 448-49 coenzyme A synthesis and, 448-49 deficiency symptoms, 449 Papain active fragments of, 63 amino acid sequence studies of, 171 denaturation, 63, 172 guanidinated mercuric derivative, 63 kinetics of, 59-61 mechanism of action, 61, 172 pH and activity of, 60 primary structure of, 62-63 purification of, 59 structure of, 171-72 thiol-ester intermediate, 61 thiol-ester linkage in, 24 urea inactivation of, 23 Papilloma virus dimensions of, 488 Parapepsins gastricin relation to, 174 Pasteur effect phenomena of, 310-12 Pectins metabolism of, 299 Penicillamine

glutathione and, 201 Penicillin analogues of, 199-200 lysine absorption and, 406 synthesis of, 196 thiamine deficiency and, 447 Penicillinase 8-azaguanine and synthesis of, 539 Pentose phosphate pathway

biochemistry of, 318-20 insulin effect on, 329-30 Pentoses biosynthesis of, 308-9 hoxoses conversion to, 308 metabolism of, 307-8

Pepsin activity of, 64 amino acid composition of, 172-73 assay methods, 64 denaturation of, 173 homogenetty of, 173-74

structure of, 64, 172-74 transpeptidation activity of, 172-73 ultraviolet spectroscopy and, 164

Peptide bond acyl shift and, 152 boron trifluoride cleavage of, 153-54

N-bromosuccinimide cleavage of, 153 carbonyl diimidazole and synthesis of, 189 deuterium exchange and, 160-61

dicyclohexylcarbodiimide and synthesis of, 190 ethoxyethyne and synthesis of, 191

oxazolidones and synthesis of, 190 reactions involving, 152-

54 synthesis and, 229 Peptide hormones isolation and purification of, 199

Peptides analogues of, 199-201 chemistry of, 183-206 cyclization of, 191 in enzymes, 56 growth-promoting proper-

ties of, 199 infrared spectroscopy and, 194 mass spectroscopy and, 183-84

metal ion complexes of, 193 new naturally occurring.

195-99

reactions of, 192-94 sequential analysis of, 183-85 synthesis of, 187-91 toxic, 196-97 Periodate oxidation of arsenite, 106-7 of ascarylose, 113

of carbohydrate, 106-11 of 2-deoxysugars, 107 of fructose, 106 of glucose-6-phosphate, 107

of inositol, 432 of methyl-glucopyranoside, 107 of polyols, 106

of triol group, 106 Peroxidation of fatty acids, 267 Phage see Bacteriophage

Phalloidin constitution of, 197 Phenols

sulfurylation of, 353-54 Phyenlalanine biosynthesis from glucose, 320-21

hydroxylation of, 21 O-hydroxyphenylacetate biosynthesis and, 232 metabolism of, 230-32

as coumarin precursor, 230 oxidation to tyrosine. 231-32

phenylketonuria and, 245-46 phenyllactic acid and, 231

pteridines and, 231 Phenylalanine hydroxylase properties of, 681 Phenylhydrazones

hydrogenation of, 116 Phenylketonuria biochemical lesion in, 245-

O-hydroxyphenylacetic acid and, 246 Phenyllactic acid as phenylalanine precursor,

231 Phenylserine biocynthesis of, 231 Phenylsulfate biosynthesis of, 347-48

Phloretic acid reaction with N-bromosuccinimide, 185 Phosphagens

biosynthesis of, 222 Phosphatase casein phosphate and, 29 phosphate incorporation

into, 30-31 Phosphate

### SUBJECT INDEX

glutamine synthetase and, . 31, 34 Phosphate exchange acetylcholine and, 373 Phosphatides in glycolipids, 136-42 Phosphatidic acids biosynthesis of, 77, 373 inositol phosphatides and, 140-41 Phosphatidopeptide isolation of, 141 sphingosine in, 141 Phosphatidyl inositol biosynthesis of, 139-40, 431 cytidine nucleotide and synthesis of, 139-40 cytochrome oxidase activation by, 141 derivatives of, 141-42 glucose derivative of, 142 glycerol phosphate and, 136 mannose derivative of, 141-42 structure of, 139 Phosphatidyl serine biosynthesis of, 208 3'-Phosphoadenosine-5'phosphosulfate reduction of, 349-50 structure and synthesis of, 348 sulfate transfer and, 353-Phosphocreatine effect on aerobic glycolysis, 309 Phosphodiesterase action on synthetic ribonucleic acid, 82 Phosphoenolpyruvic acid biosynthesis of, 77 carboxylation of, 325 metabolism of, 316 Phosphoglucomutase p32 incorporation into, 30 6-Phosphogluconic acid carbon dioxide fixation and, 327 2-Phospho-D-glycerate biosynthesis of, 76 Phosphoglyceromutase distribution of, 313 mechanism of, 30 Phosphoketolases action of, 91 fructose-6-phosphate metabolism and, 92 Phospholipase activation of, 141 lecithin and, 141, 432 Phospholipase A action on brain, 385-86 Phospholipase B

cardiolipin activation of,

141

distribution of, 385 inositol phosphate activation of, 141 lecithin and, 432 Phospholipids labeling by methyl-C14 methionine, 209 precursor of, 371-72 secretory mechanism and, 141 Phosphomutases substrates of, 81 4-Phosphopantothenvlcvsteine cytidine triphosphate and biosynthesis of, 87 Phosphoprotein metabolism of in brain, 375 8-Phosphoribosylamine a-phosphoribosyl pyrophosphate and, 87 a-Phosphoribosyl pyrophosphate β-phosphoribosylamine and, Phosphorolysis of citrulline, 223 Phosphorylase biochemistry of, 89-90 carbonium ion and, 30 corticotropin and, 559 epinephrine effect on, 335-36 glycogen biosynthesis and, 297 pyridoxal phosphate and, 89 Phosphorylation of creatine, 222 of 2-deoxyribose, 76 of diglycerides, 77, 373 hydroxymethylcytosine deoxynucleotide, 75 of inositol, 76 of mevalonic acid, 78 of pyrazolopyrimidine, 595 of tetrahydrofolic acid, 80 O-Phosphoserine phosphatase reaction catalyzed by, 208 Phosphotransacetylase isolation of, 90 Phosphotransferase adenosine nucleotide and, 74 biochemistry of, 74-81 for nucleotide interconversions, 74 of phage-infected bacteria, 75 Photo-oxidation of chymotrypsin, 26 of histidine, 26 Photosynthesis ascorbic acid role in, 418 biochemistry of, 327-29

carbohydrate metabolism and, 327-29 2-carboxy-4-ketopentol diphosphate, 328 erythrose-4-phosphate and, glucose metabolism and. 327 glycolate and, 327-28 β-hydroxybutyrate assimilation and, 264 incorporation of tritiated water and, 328 in microorganism, 263-64 salts and, 328-29 Phrenosine 2-hydroxystearic acid in, 367 Phytin hydrolysis of, 137 Phytoglycolipid composition of, 144-45 Phytosphingosine compostion of, 145 Pinocytosis insulin stimulation of, 331 Pipecolic acid lysine metabolism and, 220 oxidation of, 220 Pituitary gland glucose metabolism in, 304 Pituitary hormones carbohydrate metabolism and, 337-38 Placental hormones biochemistry of, 566-68 Plants carbohydrates of, 105 glycolipids of, 144-46 isocitritase distribution in, 290 propionic acid metabolism in. 270-71 Plasma amino acid levels in, 244 Plasma lipids gas chromatography of, 660 Plasmalogens instability of ether linkage of, 366 lysophosphatides and, 371 metabolism of, 371 of nervous tissue, 365-66 Plasmin purification of, 48 reaction of organophosphorous compounds with, 57 specificity of, 54 Plasminogen purification of, 48 Pneumococcal polysaccharide immunological paralysis and, 622 Poliovirus x-ray diffraction study of,

487

Polyacetylenic acids in fungus, 276 Polyadenylic acid titration of, 470 Poly-D, L-alanine hydrogen bonding in, 160-61 hydrophobic bonds in, 161 Polyalcohols formation of, 108 Polyamino acids antigenicity of, 610-11 Polvester bacterial formation of, 264-65 Poly-L-glutamic acid optical rotatory properties of, 154 Polymerization of chymotrypsin, 50 of sucrose, 301 of xylose, 302 Polynucleotide chemical synthesis of, 456 micrococcal nuclease hydrolysis of, 458-59 Polynucleotide phosphorylase 6-azauridine diphosphate inhibition of, 82 in human urine and sperm, Polyols periodate oxidation of, 106 Polyoma virus cancer induction by, 586-Polypeptides optical rotatory properties of, 154-55 Polyploidy nucleic acid content and, 512-13 Polyribosephosphate ribonuclease hydrolysis of, 455 Polyribothymidylic acid ribonuclease degradation of, 456 Polysaccharides formation of, 111 immunochemistry of, 609-10 metabolism of, 295-99 structure of, 105 Polyunsaturated fatty acids metabolism of, 277-82 Polyuridylic acid titration of, 470 Porphobilinogen vitamin B<sub>12</sub> biosynthesis and, 437-38

Poultry

nutrition of, 399-406

of antibodies, 614-15

into, 534

Precipitin reaction

Precorticotropin

characterization of, 559 of tobacco mosaic virus. 482-84 Pregnant mare serum gonadotropin ultraviolet spectroscopy of. 162-65 biochemistry of, 567 x-ray diffraction studies Proflavin mutations and, 515 of, 166 Proteinases Prolactin of microorganisms, 66-67 biochemistry of, 563-64 biological effects of, 564 see also Proteolytic enpurification of, 563-64 zvmes Protein biosynthesis structure of, 564 Proline acceptor ribonucleic acids and, 529-31 hydroxylation of, 226 amino acid activation and, metabolism of, 226-28 525-26 Properdin amino acid analogues and, antibodies and, 630 533-35 Propionic acid amino acid binding to riboin bacteria, 270-71 coenzyme A and, 267-72 nucleic acids and, 526-27 metabolism of, 267-75, 277 amino acid incorporation in plants, 270 and, 531-32 amino acid specficity and, Protein 527-28 acyl shift in, 152 antigenicity of, 610 amino acid transfer to riboof bacteriophage T2, 490 nucleic acids, 526-29 8-azaguanine inhibition of. of bushy stunt virus, 484 denaturation of, 63, 172 503 deuterium exchange in. by genes, 537-38 induction and repression 159 of, 540-42 dilatometry of, 159 dissociation constants of. last steps of, 535-38 metabolic pools and, 532-28 33 disulfide bonds in, 165-66 p-fluorophenylalanine inmutations and, 538-39 non-genetic structural corporation into, 534 changes and, 539-40 glutamine incorporation into, 529 nucleic acid coding and, glutathione and synthesis 509-10 in phage-infected cells, of, 531 497 groups in properties of soluble riboheat of ionization of, 26 nucleic acids and, 528 a-helix in, 154 hormones, 547-76 recent developments in, 525-46 irradiation of, 193 or nervous tissue, 374-76 vitamin B<sub>12</sub> effect on, 441 Proteolipids norleucine incorporation in nervous tissue, 367-68 into, 534 salt linkages in, 367 optical rotation of, 154-59 primary structure of, 152-Proteolytic enzymes biochemistry of, 45-72 classification of, 45 quaternary structure of, of gastric juice, 65 166-67 in mammalian tissues, 66 secondary structure of, 154-65 in microorganisms, 66 structure of, 23, 151-82 pepsin, 64 rennin, 64-65 cysteine and, 165-66 effect of solvent on, 157 Prothrombin activity of, 55 levels of, 151 purification of, 46 see also individual pro-Protonation teins of adenine, 464-65 synthesis of Protozoa see Protein biosynthesis starch metabolism in, 296 tertiary structure of, 165-Pruritus bile acids and, 639 thienylalanine incorporation

Pseudocholinesterase

brain distribution of, 382 di-isopropylfluorophosphate and, 56, 383 Pseudouridine see 5-Ribosyluracil Psicofuranine as anticancer agent, 595 Psittacosis viruses and, 475 Pteridines biosynthesis of, 446 phenylalanine oxidation and, 231 Purine nucleosides and nucleotides of, 595 folic acid and biosynthesis of. 444 histidine as precursor of, 228 protonation of, 464-65 Puromycin sugar component of, 115 Putrescine in bacteriophage T2, 490 oxidation of, 230 Pyrazolopyrimidines enzymatic phosphorylation of. 595 Pyrazolyl alanine nuclear magnetic resonance spectrum of, 194 structure of, 194 Pyriconic acid vitamin B6 metabolism and, 422 Pyridine nucleotide in mitochondria, 672-73 reduction of, 20 tissue content of, 672-73 Pyridine nucleotide transhydrogenase assay for, 427 Pyridoxal metabolism of, 422-23 see also Vitamin B6 Pyridoxal phosphate aminotransferases and, 95 azaserine and synthesis of, 600-1 dihydrosphingosine synthesis requirement for, potato phosphorylase and, 89 role of, 21 transamination and, 241 see also Vitamin B6 Pyridoxal phosphokinase brain metabolism and, 420-21 Pyridoxamine metabolism of, 422-23 4-Pyridoxic acid assay for in urine, 422 5-Pyridoxic acid

vitamin B6 metabolism and, 422 Pyridoxine arachidonic acid synthesis and. 279 metabolism of, 422-23 Pyrimethane folic acid metabolism and, 445 Pyrimidine analogues of and β-galactosidase biosynthesis, 539-40 protonation of, 464-65 Pyrrolidine y-aminobutyric acid synthesis from, 218 Pyrophosphorylases biochemistry of, 81-87 tumor drug resistance and, 590-91 Pyruvate kinase glycogen synthesis and, 77 substrates for, 76-77 Pyruvic acid as alanine precursor, 209 biotin and metabolism of, 429 carboxylation of, 327 decarboxylation of, 21 diaminopimelic acid synthesis, 219 dismutation of, 316 glycerol-l-phosphate cycle and, 677 oxidation of, 314-15 thiamine and decarboxylation of, 448 Pyruvic kinase fluorokinase and, 16, 268-69

Q-enzyme amylopectin synthesis by, 123 Quinoline metabolism of, 237 Quinone glycine reductase and, 207

Racemization of amino acids, 191-92 of β-hydroxybutyrate, 262 of lysine, 220 of serine, 192 of threonine, 192 Radiation lysine and, 193 protein and, 193 Radioactive materials gas chromatography of, 657-58 Radio frequency detector

for gas chromatography, Raffinose oligosaccharides containing. 119 Raney nickel dialdehyde reduction by, 108 Reagins and allergy, 617-18 Reduction of adenosine-5'-phosphosulfate, 350 of dialdehydes, 108 of dihydrofolic acid, 443 of diphosphopyridine nucleotide, 20 of disulfide bonds, 168-69 of glycine, 207 of 3-phosphoadenoside-5'phosphosulfate, 349-50 of pyridine nucleotides, 20 of ribonuclease, 168-69 sodium borohydride and, 168-69 of sulfate, 349-53 of sulfite, 351 of thiosulfate, 351-52 of triphosphopyridine nucleotide, 20 see also Hydrogenation Rennin purification of, 64-65 Respiration control of, 694-95 Respiratory chain biological oxidations in, 687-94 cytochromes of, 687-91 electron pathway in, 688-90 ubiquinone-coenzyme Q in, 692-94 vitamin E in, 692 vitamin K in, 691-92 Reticulocytes protein biosynthesis in, 530 Rhamnolipid bacteriostatic activity of, 133 biosynthesis of, 133 structure of, 132-33 L-Rhamnose biosynthesis of, 114, 133, 309 dialdehyde of, 107 in rhamnolipid, 132-33 Ribitol metabolism of, 308 Ribitol dehydrogenase kinetics of, 36 Ribitol phosphate polymers of in cell walls, 209

> Riboapyrimidinic acid ribonuclease action on, 456

biochemistry of, 446-47

Riboflavin

protein biosynthesis and,

acid hydrolysis of, 464

536

Ribosylimidazoles

biosynthesis of, 446 6,7-dimethyl-8-ribityllumazine and synthesis of, 446 metabolism of, 446 microorganism and metabolism of, 446 oxidative phosphorylation and deficiency of, 405 tryptophan metabolism and, 446 Ribonuclease acyl shift in, 152 alkylation of, 26, 168 amino acid sequence in, 167-69 antigenic activity of, 170 of Aspergillus oryzae, 457 carboxymethylation of, 170 comparative biochemistry of, 169 deuterium exchange and, 161 diadenylic acid hydrolysis by, 454-55 dinucleotide hydrolysis by, 454-55 disulfide bridges in, 168 intracellular, 458 of leaf, 458 of pancreas, 453-57 polyribosephosphate hydrolysis by, 455 polyribothymidylic acid and, 456 proteolytic digestion of, purification of, 456 reactions catalyzed by, 453-58 reduction of, 168-69 riboapyrimidinic acid and, structural requirements of substrates, 454 structure of, 167-70 subtilisin action on, 23, 169-70 from taka-diastase, 457 ultraviolet spectroscopy of, 162-65 virus digestion by, 476 x-ray diffraction studies on, 166 Ribonucleic acids alkaline hydrolysis of, 467-69 8-azaguanine incorporation into, 592-93 bismuth hydroxide hydrolysis of, 467-68 chemical hydrolysis of,

467-69

deoxyribonucleic acid and

synthesis of, 510-11

dinucleoside monophos-

phate from 467-68

genetic chemistry of, 517hydrazinolysis of, 456 hydroxylamine inactivation of, 481-82 of influenza virus, 486 of microsomal fraction, 462 minor constitutents of, 460-63, 510 mutations and, 514, 518-19 soluble fraction L-alloisoleucine incorporation into, 529 amino acid transfer to, 526-29 composition and properties of, 528 cytidine triphosphate and activation of, 527 p-fluorophenylalanine incorporation into, 529 fractionation of, 528 role in protein synthesis, 529-31 terminal nucleotide grouping of, 527 trace components of, 462 of tobacco mosaic virus nitrous acid mutations of, 478 - 79nucleotide sequence of, peptides in, 478-81 physical properties of, structure of, 477-78 tumors in phage-infected cells, 496 tumor viruses and, 585-89 urea denaturation of, 457 of viruses, 475-82 from animals, 479-82 criteria for infectivity of. 476 of hoof-and-mouth disease, 487 hydroxylamine inactivation of, 481-82 infectivity of, 517-18 from plants, 479 properties of, 476-82 structure of, 520 synthesis of, 519-20 Ribonucleoproteins protein biosynthesis and, 536 Ribonucleoside triphosphates deoxyribonucleic acid incorporation of, 83 as ribonucleic acid precursors, 82 biosynthesis of, 308-9 vitamin B<sub>12</sub> and metabolism of, 442 Ribosomes

5-Ribosyluracil in ribonucleic acids, 510 5-Ribosyluracilphosphate structure of, 461 5-Ribosyluracil-3'-phosphate ester ribonuclease hydrolysis of, 455 Ribulose diphosphate dephosphorylation of, 328 Rous sarcoma virus lipids in, 487 properties of, 585 structure of, 487-88 S Salicin biosynthesis of, 89 Sarcoma methylcholanthrene induction of, 580 Sarcosine biosynthesis cofactor requirements, 208 dimethylglycine and synthesis of, 208 Sarin antidote for, 384-85 Scurvy effect on tricarboxylic acid cycle, 420 Seaweed carbohydrates in, 105 Sebum fatty acids of, 659-60 Sedoheptulose-7-phosphate adenosine and, 320 biosynthesis of, 320 Selenium content of natural products, 395 forms of biological activity of, 395-96 nutritional role of, 391-98 Sephadex use of, 186 Serine active center of certain proteinases, 45, 46-58 acvl shift and, 152 amino acids adjacent to, 24 cystathionine formation from, 225 cysteine biosynthesis from, di-isopropylphosphoryl derivative of, 24 formic acid reaction with, 152-53 as glucose precursor, 208

### SUBJECT INDEX

glycine metabolism and, 208 of trypsin, 165 metabolism of, 207-9 of tryptophan, 163-64 of tyrosine, 162-65 racemization of, 192 of xanthine oxidase, 37 D-Serine in animal tissues, 208 Spermidine in bacteriophage T2, 490 in lombricine, 208 Serine proteinases oxidation of, 230 isolation and purification, Sper mine 46-48 oxidation of, 230 model compounds and Sphingolipid bases mechanism, 58-59 gas chromatography of, 661primary structure and chem-62 Sphingolipids ical modification, 55 specificity and kinetics, 48-54 heterogeneity of, 143 Serotonin in nervous tissue, 366-67 carcinoid and, 248-49 Sphingomyelin glucuronide of, 240 biosynthesis of, 85 metabolism of, 240 ceramide and biosynthesis Serum of. 86 amino acid levels of, 243-44 in influenza virus, 485 magnesium levels of, 645 Sphingosine transaminase levels of, micro-assay of, 367 242-43 in phosphatidopeptide, 141 Shikimic acid Spinal cord cholinesterases of, 382 as aromatic precursor, 230-31 Sponge biosynthesis of, 320-21 taurobetaine in, 226 glucose metabolism and, 'S" protein 320-21 protein synthesis and, 531 2-keto-3-deoxyheptonic Sprue acid and synthesis of, 321 hydroxyskatole derivative Sialic acids in urine and, 250 structure of, 115 skatole metabolism and, 250 Skatole Squalene biosynthesis of, 78, 98 metabolism in sprue patients, 250 cyclization of, 27 Snake venom mevalonic acid and synphospholipase activity of, 385 thesis of, 27 Sodium borohydride Starch dialdehyde reduction by, 108 anaerobic synthesis of, 296 ribonuclease reduction by, biosynthesis of, 87 168 carbon dioxide assimilation Somatotropin into. 296 biochemistry of, 561-63 chemistry of, 105 degradation of, 121-22 biological effects of, 563 enzymology of, 105 chemical properties of, 562-63 metabolism of, 295-96 isolation of, 561 in protozoa, 296 D-Sorbitol Stereochemistry effect on vitamin B12 abof inositol, 136-37 sorption, 406, 439 Steroid hormones metabolism of, 306-7 carbohydrate metabolism thiamine deficiency and, and, 338-39 447-48 Steroids Spectroscopy gas chromatography of, 665 of albumin, 162-65 hapten action of, 611 of amino acids, 194 review on, 261 of chymotrypsin, 164-65 sulfurylation of, 97, 355 of dinucleoside monophos-Steroid sulfatases phates, 468 biochemistry of, 360 of 5-hydroxymethyluracil. Sterol esters 461 fatty acids of, 660-61 of insulin, 162-65 Sterols of pepsin, 164 gas chromatography of of peptides, 194 of proteins, 162-65 side chains, 665 Stizolobic acid

of ribonuclease, 162-65

isolation of, 194

Strandin carbohydrate incorporation into, 371 Strepogenin definition of, 199 Stress serum transaminase levels in, 243 Subtilin A composition of, 196 Subtilisin action on ribonuclease, 23, 169-70 purification of, 46 purity of, 48 Succinic acid decarboxylation of, 429 methyl malonate and, 267-68 oxidation of, 688-90 Succinic semialdehyde aldehyde dehydrogenase and, 216 analysis for, 216 metabolism of, 315 Succinic semialdehyde dehydrogenase specificity of, 218 Succinic thiokinase oxygen exchange by, 34 Succinyladenosine isolation of, 463 Sucrose biosynthesis of, 90, 120 polymerization of, 301 Sucrose phosphorylase mechanism of, 20 Sulfamates biosynthesis of, 97, 354 Sulfatases biochemistry of, 357-61 in taka-diastase, 359 Sulfate activation of, 347-49 adenosine nucleoside phosphorylase inhibition and, 90 of cerobroside, 143 metabolism of, 347-64 methyl viologen and reduction of, 349-51 reduction of, 349-53 animal tissues and, 352-53 taurine biosynthesis from, 352-53 as terminal electron acceptor, 350 transfer of, 353-57 Sulfatide isolation of, 366 Sulfhydryl group insulin effect on, 332 role in protein, 26 of Rous sarcoma virus, 488 vitamin B<sub>12</sub> effect on, 441 Sulfide methionine synthesis and, 352 Sulfite

cytochrome-c3 and reduction of, 351 reduction of, 351-52 sulfate reduction to, 349-50 Sulfokinases biochemistry of, 353-57 Sulfur compounds metabolism of, 347-64 Sulfuryladenylate structure and synthesis of, 348 Sulfurylation of alcohols, 353 of arylamines, 354-55 of estrone, 355 of lipids, 357 of mucopolysaccharides, 355-57 of phenols, 353-54 of steroids, 355 Sulfuryltransferases biochemistry of, 97 purification of, 96

T

Tadpole urea synthesis in, 223 Taka-diastase ribonuclease of, 457 sulfatase action of, 359 D-Talose in hygromycin B, 114 D-Tartaric acid amino acid racemates and, 191-92 Taurine biosynthesis of, 352-53 cysteine and biosynthesis of, 226 metabolism of, 225-26 sulfate and synthesis of, 352-53 Taurobetaine in sponges, 226 Teichoic acid D-alanine in, 84 Terpenes, 261 Testosterone follicle-stimulating hormone effect upon, 566 Tetanus toxin complex lipids and, 144 ganglioside fixation of, 144 Tetrahydrofolic acid bioxynthesis of, 443-44 metabolic role of, 93, 94 phosphorylation of, 80 Thermodynamics of enzyme reactions, 37-38 Thiamine ascorbic acid biosynthesis and, 448 assay for, 447 biosynthesis of, 78, 447 deficiency of

and histidase, 448

and penicillin, 447 and sorbitol, 447-48 degradation of, 447-48 mechanism of action, 21 microorganisms and synthesis of, 447 pyruvate decarboxylation and, 448 transketolase and, 448 Thiamine monophosphate biosynthesis of, 98 Thiamine pyrophosphate oxalic acid metabolism and, 275 Thienylalanine incorporation into protein, 534 Thioester reaction with hydroxylamine, 262 6-Thioguanine anticancer agent, 594-95 Thiokinase mechanism, 18 Thiol ester ficin activity and, 61 in papain, 24 Thiol group active center in certain proteinases, 45, 59-64 Thiol proteases papain and ficin, 59-63 Thiosulfate reduction of, 351-52 Thiotaurine in rat urine, 226 Thiouracil antimetabolite activity of, 598  $\beta$ -galactosidase synthesis and, 540 Threonine acyl shift and, 152 aminoacetone biosynthesis and, 211 biosynthesis of, 76 formic acid reaction with, 152-53 homoserine kinase inhibition and, 210 metabolic pool of, 532-33 metabolism of, 210-11 organic synthesis of, 186 racemization of, 192 D-L-Threonine resolution of racemates, 192 Thrombin criteria for purity, 47-48 di-isopropylphosphoryl derivative of, 46 purification of, 46 specificity of, 53 Thymidine, tritiated nucleic acid biosynthesis and, 511 Thymidine-5'-phosphate biosynthesis of, 445 Thymidylic acid kinase and deoxyribonucleic acid synthesis, 505 Thymine

biosynthesis and vitamin B<sub>12</sub>, 442 5-fluorouracil and, 597 mutations and, 515 in ribonucleic acids, 460 Thymine synthetase in phage-infected cells, 495 Thyroid gland magnesium metabolism and, 646 Thyrotropin biochemistry of, 559-61 biological effects of, 561 chemical properties, 560-61 isolation of, 559-60 Thyrotropin-releasing factor characterization of, 561 Thyroxine analogue of, 193 deiodination of, 234 metabolism of, 234-35 Tobacco mosaic virus N-acetyl-serine terminal group, 483 amino acid analysis, 482-83 leaf ribonuclease and biosynthesis of, 458 linking of subunits in, 483 mutants of, 478-79 process of infection, 483-84 properties of ribonucleic acids of, 476-79 protein structure of, 482-84 ribonuclease digestion of, 456 subunits of, 520 Tocopherol ascorbic acid synthesis and, 416 see Vitamin E Tolbutamide (orinase) mode of action, 335 Toxemia of pregnancy serum transaminase levels in, 243 Toxopyrimidine brain metabolism and, 421 Tranquilizers and animal nutrition, 404 Transacetylase nomenclature of, 91 Transaminase in cerebrospinal fluid, 243 corticotropin and, 559 cortisone effect on, 242 myocardial infarction and,243 serum levels of, 242-43 jaundice and, 243 pregnancy and, 243 stress and, 243 vitamin B6 and, 421 Transamination of amino acids, 241-42 of y-aminobutyrate, 216 pyridoxal phosphate and, 241 of tyrosine, 232 vitamin B6 and, 241 Transcarbamylation

of, 541

of, 233-37

239-40

238-39

235-38

3-hydroxyanthranilate and

kynurenine and metabolism

metabolism of, 235-40

in disease, 248-50

metabolism of, 236-37

5-hydroxyindole pathway,

indolacetic acid pathway,

new metabolites of, 237

nicotinic acid pathway,

transaminases for, 239

riboflavin and, 446

hydroxyaspartate and, 212 Transferases acyl, 90-93 adenylyl, 83 amino, 95 biochemistry of, 73-104 carbamyl, 96 cholinephosphoryl, 85 coenzyme A, 96 cytidylyl, 85 definition of, 73 formyl and formimino, 93 glycosyl, 87-93 hydroxymethyl, 94 mechanism of, 19-20 methyl, 93 nomenclature, 74 in nucleic acid synthesis, 82-83 phosphomutases, 81 phosphotransferases complex, 79-81 simple, 74-79 substituted phosphoryl, 81-87 sulfur, 96 sulfuryl, 97 uridylyl, 84 Transglycosidase properties of, 301-2 Transglycosidation invertase and, 301-2 Transhydrogenation estrogen and, 684 triphosphopyridine nucleotide and, 684 Transketolase thiamine deficiency and, 448 Transpeptidation pepsin and, 172-73 Trehalose biosynthesis of, 300 in cord factor, 134 glucose metabolism and, 300 Tricarboxylic acid cycle biochemistry of, 313-18 enzymes of, 315 function in kidney, 313-14 scurvy and, 420 Trifluoroacetyl group amino group protection, 187-88 Triglyceride lysine hydrolysis of, 193 Trihydroxy bile acids levels in jaundice, 637-39 Tri-idothyronine deiodination of, 234 sulfate derifative of, 234-35 2, 4, 6-Trimethylbenzoyl βglycosides uses of, 118 Triol group periodate oxidation of, 106 Triose phosphate dehydrogenase activity in diabetes, 334 Triose phosphate isomerase

mechanism of, 27 nicotinic acid, 237, 424-25 Triphosphopyridine nucleotide peptide bond cleavage and, biological oxidations and, 679-84 pyrollase biosynthetic pathways and, characteristics of, 235-36 680-81 induction by, 236 diabetes and, 683-84 synthetase energetics and, 679-80 mutation and activity of, enzymes requiring, 681 specificity of, 235 folic acid metabolism and, 443-44 suppressor mutations and, insulin effect on, 329-30, 683-84 ultraviolet spectroscopy reduction of, 20 and, 163-64 xanthurenic acid and metasulfate reduction and, 349bolism of, 237 51 in tissues, 682-83 Tryptophanyl bonds N-bromosuccinimide cleatranshydrogenation and, 684 vage of, 153 Tritiation Tumors glycerol-l-phosphate dehyof dihydroxyacetone phosphate, 29 drogenase absence in, Tritylation 677 of amino acids, 188 transaminase levels in spinal fluid in, 243 Trypsin active fragments of, 57 Tumor viruses acyl enzyme intermediate, properties of, 487-88 52 Tyramine acyl shift and, 152-53 metabolism of, 232 amino acid sequence in, 56 Tyrocidin A effect of salts on action of, partial synthesis of, 196 Tyrcsine effect of organic solvents ascorbic acid and metaboon action of, 51 lism of, 417 inhibitors of, 48 biosynthesis from glucose, kinetics of, 48 320-21 bromination of, 184-85 organophospho derivative of, 56 N-bromosuccinimide reacspecificity of, 48 tion with, 184-85 spectral changes during as lignin precursor, 231 denaturation of, 54 melanoma and, 247 ultraviolet spectroscopy metabolism of, 232-33 phenylalanine hydroxylation and, 165 Trypsinogen to, 21, 231-32 denaturation of, 57 sulfurylation of, 354 Tryptophan transamination of, 232 antibiotic esters of, 202 ultraviolet spectroscopy in bacteriophage, 492 and, 162-65 biosynthesis from glucose, 320-21 H induction and repression

Ubiquinones distribution of, 693 nutritional significance of, 398-99 in respiratory chain, 692-94 role of, 693-94 structure of, 693 see also Coenzyme Q Ultraviolet irradiation and mutations, 514-15 Ultraviolet spectroscopy protein structure and, 162-65 α, β-Unsaturated acyl coenzyme A reductase

hydantoin-5-propionate in.

hydroxyproline in, 247

hydroxyskatole in, 250

properties of, 681 Urea aldolase inactivation by, 23 glutamic dehydrogenase inhibition by, 213 metabolism of, 222-24 synthesis in tadpoles, 223 Urease bacterial origin of, 215 mechanism of, 29 Urethan antipyrimidine activity of, 598 Uric acid glycine metabolism and, 208 Uridine 6-azauridine antagonism to, 595 tritiated nucleic acid biosynthesis and, 511 Uridine diphosphate-acetylgalactosamine-sulfate metabolism of, 356 Uridine diphosphate-acetylglucosamine-pyruvate metabolism of, 316 Uridine diphosphate-galactose ascorbic acid synthesis and, 413-14 Uridine diphosphate-galacturonic acid-1-phosphate biosynthesis of, 299 Uridine diphosphate-glucose ascorbic acid synthesis and, 413-14 glycogen biosynthesis and, 297 Uridine diphosphate-glucuronic acid ascorbic acid synthesis and, 413-14 biosynthesis from glucose, Uridine diphosphate sugars biochemistry of, 85, 88 interconversion of, 115-16 Uridine diphosphate-transglucuronylase distribution of, 301 Uridine diphosphate-Dxylose reaction of, 302 Uridine kinase 5-fluorouracil and, 597 Uridine triphosphate activation of carbohydrates, 84 Uridylyltransferase biochemistry of, 84 amino acids in, 243-44 β-aminoisobutyric acid in, 244-45

branch chain keto acids in,

kynurenine derivatives in, 424-25 polynucleotide phosphorylase in, 82 4-pyridoxic acid in, 422 thiotaurine in, 226 Urocanic acid metabolism of, 228-29 Uronic acid epimerization of, 114 Uronic acid isomerase action of, 321-22 Uronolactonase activity of, 414-15 Ustilagic acid fatty acids in, 132 glucose incorporation into, 132 isolation of, 131-32 V Valine a-acetolactate and, 220 acetylmethylcarbinol and biosynthesis of, 220-21 activation of, 525 biosynthesis of, 220 a-ketoisovalerate and, 221 metabolism of, 220-22 Vasopressin biochemistry of, 548-53 biological activity of, 552-53 and hvaluronidase, 553 isolation and purification, 548-49 mechanism of action of, 198 structure of, 549-50 synthesis of, 550 Viruses of animals, 484-88 avian leukoses, 585 of bacteria, 488-97 biochemistry of, 475-502 carcinogenesis and, 584-85 deoxyribonucleic acid in, 487 genetic chemistry of ribonucleic acids from, 517hemagglutinins of, 484-86 infectivity of ribonucleic acids of, 517-18 leukemia, 588-89 mouse mammary, 585-86 nature of, 475 of plants, 482-84 polyoma (parotid), 586-87 ribonucleic acids in

infectivity of, 475-82 mutation of, 518-19 preparation of, 481 properties of, 476-82 structure of, 520 synthesis of, 519 Rous sarcoma, 585 of tumors, 487-88, 585-89 Vitamins water-soluble biochemistry of, 413-52 see specific vitamins Vitamin B6 y-aminobutyric acid and, 215 antagonists of, 420-22 assay methods, 422 biochemistry of, 420-24 enzymes containing, 422 glutamic acid and deficiency of, 423 isoniazid effect on, 241-42 isopyridoxal and metabolism of, 422 kynureninase and, 422 metabolism of, 422-23 pyriconic acid and metabolism of, 422 5-pyridoxic acid and, 422 role of, 423-24 transaminase and, 421 transamination and, 421 Vitamin B<sub>12</sub> absorption and binding of, 438-40 adenine in. 212 amino acid activation and, 44 amino acid transfer and, 530 5-aminolevulinic acid and synthesis of, 437-38 anemia and, 438 assay method for, 437 benzimidazole inhibition of, 440 biochemistry of, 437-42 biosynthesis of, 437-38 deoxyribose biosynthesis and, 442 distribution of, 438 ethylenediaminetetraacetate and absorption of, 439 folic acid storage and, 441 glutamate metabolism and, 211-12 intrinsic factor and, 438 leukemia and, 440 lipid metabolism and, 440-41 metabolic role of, 440-42 methionine synthesis and, 224, 437 β-methylaspartate biosynthesis and, 440 methyl groups of, 225 microorganisms and assay

### SUBJECT INDEX

for, 437 mitochondria and, 441 myelin and, 441 phosphobilinogen and, 437-38 propionic acid metabolism and, 267-68 protein biosynthesis and, 441 ribose metabolism and, 442 role of, 22 D-sorbitol and absorption of, 406, 439 sulfhydryl compounds and, 441 thymine biosynthesis and, 442 Vitamin C α-lipoic acid and, 419-20 see also Ascorbic acid Vitamin E antioxidant property of, 397 biological role of, 397 cytochrome-c reductase and, 397 methylhistidinuria and, 230 nutrition and, 391-98 in respiratory chain, 692 Vitamin K cytochrome-c reductase and, 397

hydroxyanthranilic oxidase

and, 237
oxidative phosphorylation
and, 691-92
in respiratory chain, 69192
Vitamin K<sub>3</sub>
see Menadione

### W

Wheat glycolipids in, 135 White muscle disease etiology of, 392-93 Wilson's disease copper and, 378

Xanthine oxidase active site of, 27 cofactor valence changes and, 32 flavin adenine dinucleotide and, 37 spectrophotometric studies on, 37 Xanthosine monophosphate amination of, 86 glutamine and, 87 Xanthurenic acid as tryptophan metabolite, 237 X-radiation deoxyribonucleic acid syn-

thesis and, 505 glucose metabolism and, 306 X-ray diffraction hemoglobin and, 166 of myoglobin, 166 of poliovirus, 487 of proteins, 166 of ribonuclease, 166 D-Xylitol biosynthesis of, 308 Xylooligosaccharides biosynthesis of, 89 Xylose polymerization of, 302 L-Xylulose biosynthesis of, 321-22, 415 L-Xylulose reductase properties of, 681

### Y

Yeast hydrogen sulfide synthesis in, 351-52 sulfate reduction by, 349-52

### Z

Z-enzyme action of, 121 Zymogens activation of, 54-55

### CUMULATIVE INDEX

### CHAPTER TITLE INDEX VOLUMES 21 TO 29

### ALKALOIDS

L. J. Sargent and L. F. Small, 21: 493-520

### AMINO ACIDS, PEPTIDES, PROTEINS

Biosynthesis:

H. Chantrenne, 27: 35-56; J. L. Simkin, 28: 145-70; G. N. Cohen and F. Gros, 29: 525-46

Chemistry

H. B. Bull, 21: 179-208; Cl. Fromageot and M. Jutisz, 22: 629-78; W. L. Hughes and F. M. Sinex, 23: 177-214; A. G. Ogston, 24: 181-206; H. Fraenkel-Conrat, 25: 291-330; D. Steinberg and E. Mihalyi, 26: 373-418; P. Edman, 28: 69-96; R. Schwyzer, 29: 183-266

Metabolism:

H. Tarver, 21: 301-32;
H. N. Christensen, 22: 233-60;
G. Ehrensvärd, 24: 275-310;
E. A. Adelberg and M. Rabinovitz, 25: 349-96;
H. Kamin and P. Handler, 26: 419-90;
M. J. Coon and W. G. Robinson, 27: 561-612;
W. E. Knox and E. J. Behrman, 28: 223-56;
S. Udenfriend, H. Weissbach and C. Mitoma, 29: 207-60
Structure:

R. L. Hill, J. R. Kimmel and E. L. Smith, 28: 97-144; G. E. Perlmann and R. Diringer, 29: 151-82

### ANTIBIOTICS

T. S. Work, 21: 431-58; B. M. Duggar and V. L. Singleton, 22: 459-96; S. B. Binkley, 24: 597-626; E. B. Chain, 27: 167-222

### CANCER

A. C. Griffin, 23: 345-80; A. Haddow, 24: 689-742; C. Heidelberger, 25: 573-612; H. E. Skipper and L. L. Bennett, Jr., 27: 137-66; E. P. Anderson and L. W. Law, 29: 577-608

Carcinogenesis:

E. C. Miller and J. A. Miller, 28: 291-320

Neoplastic Tissue:

P. C. Zamecnik, 21: 411-30; C. J. Kensler and M. L. Petermann, 22: 319-40

### CARBOHYDRATES

Chemistry:

R. Montgomery and F. Smith, 21: 79-108; H. S. Isbell and H. L. Frush, 22: 107-24; R. L. Whistler and D. I. McGilvray, 23: 79-98; J. K. N. Jones, 24: 113-34; E. J. Bourne and R. Stephens, 25: 79-100; J. C. Sowden, 26: 645-66; R. E. Reeves, 27: 15-34; W. Pigman, K. Nisizawa and S. Tsuiki, 28: 15-38; W. J. Whelan, 29: 105-30

Immunopolysaccharides:

J. Tomcsik, 22: 351-70

Metabolism:

K. Bloch, 21: 273-300;
S. Ochoa and J. R. Stern, 21: 547-602;
L. F. Leloir and C. E. Cardini, 22: 179-210;
S. Weinhouse, 23: 125-76;
B. L. Horecker and A. H. Mehler, 24: 207-74;
S. Korkes, 25: 685-734;
C. de Duve and H. G. Hers, 26: 149-80;
M. F. Utter, 27: 245-84;
H. Holzer, 28: 171-222;
A. Beloff-Chain and F. Pocchiari, 29: 295-346

### CAROTENOIDS

See Pigments, carotenoids

### CUMULATIVE INDEX CHAPTER TITLES

### CELL

Particles:

W. C. Schneider and G. H. Hogeboom, 25: 201-24

### CHOLESTEROL

See Steroids, cholesterol

### CHROMATOGRAPHY

General:

S. Moore and W. H. Stein, 21:521-46

Gas-Phase:

S. R. Lipsky and R. A. Landowne, 29: 649-68

#### CLINICAL BIOCHEMISTRY

I. D. P. Wootton, M. D. Milne and E. J. King, 23: 437-58; O. Bodansky, 24: 627-52; J. G. Reinhold, 26: 587-610; C. G. Holmberg and R. Blomstrand, 28: 321-42; I. MacIntyre and I. D. P. Wootton, 29: 635-48

### COMPARATIVE BIOCHEMISTRY

M. Florkin, 21: 459-72

### CONNECTIVE TISSUE

S. Roseman, 28: 545-78

### DRUG AND FOREIGN COMPOUNDS

Metabolism of:

W. H. Fishman, 25: 649-84; B. B. Brodie, J. R. Gillette and B. N. La Du, 27: 427-54

### ENZYMES

Mechanism:

P. D. Boyer, 29: 15-44

Nonproteolytic and Nonoxidative:

K. I. Altman and A. L. Dounce, 21: 29-78; S. Hestrin, 22: 85-106; H. M. Kalckar and H. Klenow, 23: 527-86; B. Axelrod, 24: 45-82; A. Meister, 25: 29-56; S. Schwimmer, 26: 63-96

Oxygenases and Hydroxylases:

L. Massart and R. Vercauteren, 28: 527-44

Proteolytic:

A. K. Balls and E. F. Jansen, 21: 1-28; K. Linderstrøm-Lang and K. Max Møller, 22: 57-84; P. Desnuelle, 23: 55-78; G. W. Schwert, 24: 83-112; J. S. Fruton and M. J. Mycek, 25: 57-78; B. J. Jandorf and H. O. Michel, 26: 97-118; G. H. Dixon, H. Neurath and J. -F. Pechère, 27: 489-532; B. S. Hartley, 29: 45-72

n. Neurath and J.-F. Pechere, 21: 409-552; B. S. Hartley, 29: 45-72 Transferases:

O. Hoffmann-Ostenhof, 29: 73-104

### FISHES

Biochemistry of:

H. L. A. Tarr, 27: 223-44

### FUNGI

Chemistry of:

J. H. Birkinshaw, 22: 371-98; C. E. Stickings and H. Raistrick, 25: 225-56

### GENETICS

J. R. S. Fincham, 28: 343-64; R. L. Sinsheimer, 29: 503-24

### HEMOGLOBIN

H. A. Itano, 25: 331-48

### HORMONES

Protein:

C. H. Li and J. I. Harris, 21: 603-32; M. P. Stack-Dunne and F. G. Young, 23: 405-36; O. K. Behrens and W. W. Bromer, 27: 57-100; R. Acher, 29: 547-76

Steroid: See Steroids, hormones

### Thyroid:

J. Roche and R. Michel, 23: 481-500

### IMMUNOCHEMISTRY

M. Heidelberger, 25: 641-58; F. Haurowitz, 29: 609-34

Immunopolysaccharides:

See Carbohydrates, immunopolysaccharides

#### LIPIDS

E. Klenk and H. Debuch, 38: 39-68

Chemistry:

H. J. Deuel, Jr. and R. Alfin-Slater, 21: 109-28; T. P. Hilditch, 22: 125-40; F. B. Shorland, 25: 101-22; J. H. Law, 29: 131-50

Metabolism:

K. Bloch, 21: 273-300; A. C. Frazer, 21: 245-72; C. Artom, 22: 211-32; D. B. Zilversmit, 24: 157-80; F. Lynen, 24: 653-88; S. Bergström and B. Borgström, 25: 177-200; E. P. Kennedy, 26: 119-48; P. K. Stumpf, 29: 261-94 Phosphatides:

E. Baer, 24: 135-56

### METABOLIC ANTAGONISTS

R. O. Roblin, Jr., 23: 501-26; W. Shive and C. G. Skinner, 27: 643-78

#### MINERAL METABOLISM

See Nutrition, mineral metabolism

#### MUSCLE

M. Dubuisson, 21: 387-410; W. F. H. M. Mommaerts, 23: 381-404; H. H. Weber, 26: 667-98

### NEUROCHEMISTRY

F. N. LeBaron, 28: 579-604; R. H. S. Thompson and G. R. Webster, 29: 365-90

### NUCLEIC ACIDS

F. W. Allen, 23: 99-124; D. M. Brown and A. R. Todd, 24: 311-38; W. E. Cohn and E. Volkin, 26: 491-522

Enzymology:

L. A. Heppel and J. C. Rabinowitz, 27: 613-42; C. A. Dekker, 29: 453-74

Purines and Pyrimidines:

 D. O. Jordan, 21: 209-44; G. B. Brown, 22: 141-78; C. E. Carter, 25: 123-46;
 L. A. Heppel and J. C. Rabinowitz, 27: 613-42; S. C. Hartman and J. M. Buchanan, 28: 365-410

### NUTRITION

E. J. Bigwood, 21: 355-86; A. G. Hogan, 22: 299-318; P. H. Phillips and M. A. Constant, 23: 319-44; J. F. Brock, 24: 523-42; W. H. Griffith and M. E. Swendseid, 25: 537-72; O. W. Portman and D. M. Hegsted, 26: 307-26; N. S. Scrimshaw, G. Arroyave and R. Bressani, 27: 403-26; R. E. Olson, 29: 467-98; M. O. Schultze, 29: 391-412

### Mineral Metabolism:

G. K. Davis and J. K. Loosli, 23: 459-80; E. J. Underwood, 28: 499-526 of Ruminants:

C. F. Huffman, 22: 399-422

### OXIDATIONS, BIOLOGICAL

B. Chance and L. Smith, 21: 687-726; E. C. Slater, 22: 17-56; C. B. Anfinsen and W. W. Kielley, 23: 17-54; D. E. Green and H. Beinert, 24: 1-44; S. F. Velick, 25: 257-90; H R Mahler, 26: 17-62; J. B. Neilands, 27: 455-88; M. Klingenberg and T. Bücher, 29: 669-708

### PEPTIDES

See Amino Acids, Peptides, Proteins

### PHOSPHATIDES

See Lipids, phosphatides

### CUMULATIVE INDEX CHAPTER TITLES

### PHOTOSYNTHESIS

A. H. Brown and A. W. Frenkel, 22: 423-58

#### DICMENTS

Carotenoids:

G. Mackinney, 21: 473-92; T. W. Goodwin, 24: 497-522

Porphyrins: C. Rimington, 26: 561-86

### PORPHYRINS

See Pigments, porphyrins

### PREFATORY CHAPTERS

E. V. McCollum, 22: 1-16; K. Thomas, 23: 1-16; B. S. Platt (Sir Edward Mellanby), 25: 1-28; R. Peters, 26: 1-16; H. T. Clarke, 27: 1-14; E. F. Terroine, 28: 1-14; H. O. L. Fischer, 29: 1-14

#### PROTEINS

See Amino Acids, Peptides, Proteins

### PURINES AND PYRIMIDINES

See Nucleic Acid, purines and pyrimidines

#### RUMINANTS

See Nutrition, of ruminants

#### STEROIDS

Cholesterol

M. Friedman, S. O. Byers and S. St. George, 25: 613-40; G. Popják, 27: 533-60

Or Mories.
C. W. Shoppee, 22: 261-98; S. Roberts and C. M. Szego, 24: 543-96; R. I. Dorfman, 26: 523-60

### Metabolism:

L. T. Samuels and H. Reich, 21: 129-78; P. A. Katzman, E. A. Doisy, Jr., J. T. Matschiner and E. A. Doisy, 28: 257-90

### SULFUR COMPOUNDS

J. D. Gregory and P. W. Robbins, 29: 347-64

### TEETH

Biochemistry of:

H. M. Leicester, 22: 341-50

### U. S. S. R.

Biochemistry in:

J. A. Stekol, 26: 611-44; 27: 679-702; 28: 605-36

### VIRUSES

F. W. Putnam, 25: 147-76; G. Schramm, 27: 101-36; L. M. Kozloff, 29: 475-502

### VISION

Biochemistry of:

G. Wald, 22: 497-526

### VITAMINS

Fat-Soluble:

A. R. Kemmerer, 21: 333-54; C. A. Baumann, 22: 527-44; M. L. Quaife, 23: 215-44;

P. D. Boyer, 24: 465-96; E. Kodicek, 25: 497-536; K. L. Blaxter, 26: 275-306;

S. R. Ames, 27: 371-402

### Water-Soluble:

A. D. Welch and C. A. Nichol (Vitamins Concerned with One- and Two-Carbon Intermediates), 21: 633-86; O. A. Bessey, H. J. Lowe and L. L. Salomon, 22: 545-628;

E. L. Smith (Folic Acid, B<sub>12</sub>, CF, Choline, PAB, Biotin), 23: 245-74; V. H. Cheldelin and T. E. King (Pantothenic Acid, Thiamine, Lipoic Acid, Riboflavin, Vitamin B6, Niacin, Ascorbic Acid, Miscellaneous Factors), 23: 275-318; G. M. Briggs and F. S. Daft

(Vitamin B<sub>12</sub>, Folic Acid, Choline, Para-Aminobenzoic Acid), 24: 339-92; R. Fried and H. Lardy (Vitamin B<sub>6</sub>, Niacin, Biotin, Ascorbic Acid), 24: 393-418; B. C. Johnson (Thiamine, Lipoic Acid, Riboflavin, Pantothenic Acid, Inositol, Miscellaneous Factors), 24: 419-64; J. J. Pfiffner and O. D. Bird (Vitamin B<sub>12</sub>, Folic Acid, Choline, Para-Aminobenzoic Acid), 25: 397-434; E. E. Snell and D. E. Metzler (Vitamin B<sub>6</sub>, Nicotinic Acid, Biotin, Ascorbic Acid), 25: 435-62; G. W. E. Plaut and J. J. Betheil (Pantothenic Acid, Inositol, Riboflavin, Thiamine, Lipoic Acid, Unidentified Factors), 25: 463-96; J. R. Totter (Vitamin B<sub>12</sub>, Folic Acid, Choline, Para-Aminobenzoic Acid), 26: 181-208; L. D. Greenberg (Biotin, Pyridoxin Group, Nicotinamide, Ascorbic Acid), 26: 209-42; G. D. Novelli (Pantothenic Acid, Thiamine, Lipoic Acid, Riboflavin, Inositol), 26: 243-74; H. P. Broquist (Folic Acid, B<sub>12</sub> Group, Choline), 27: 285-312; C. R. Lushbough and B. S. Schweigert (Ascorbic Acid, Bictorny, Nicotinamide, Vitamin B<sub>6</sub>), 27: 313-38; H. P. Sarett and A. B. Morrison (Thiamine, Lipoic Acid, Pantothenic Acid, Riboflavin, Inositol), 27: 339-70; M. K. Horwitt (Thiamine, Riboflavin, Pantothenic Acid, Nicotinamide, Lipoic Acid), 28: 411-38; M. E. Coates and J. W. G. Porter (Vitamin B<sub>12</sub>, Folic Acid, Ascorbic Acid, Biotin, Vitamin B<sub>6</sub>, Biotin, Inositol), 29: 413-36; J. S. Dinning (Vitamin B<sub>12</sub>, Folic Acid, Thiamine, Riboflavin, Pantothenic Acid), 29: 413-52

### X-RAY STUDIES OF STRUCTURE

J. C. Kendrew and M. F. Perutz, 26: 327-72

## **CUMULATIVE INDEX**

### CONTRIBUTING AUTHORS VOLUMES 21 TO 29

#### Α

Acher, R., 29: 547 Adelberg, E. A., 25: 349 Alfin-Slater, R., 21: 109 Allen, F. W., 23: 99 Altman, K. I., 21: 29 Ames, S. R., 27: 371 Anderson, E. P., 29: 577 Anfinsen, C. B., 23: 17 Arroyave, G., 27: 403 Artom, C., 22: 211 Axelrod, 24: 45

### B

Baer, E., 24: 135 Balls, A. K., 21: 1 Baumann, C. A., 22: 527 Behrens, O. K., 27: 57 Behrman, E. J., 28: 223 Beinert, H., 24: 1 Beloff-Chain, A., 29: 295 Bennett, L. L., Jr., 27: 137 Bergström, S., 25: 177 Bessey, O. A., 22: 545 Betheil, J. J., 25: 463 Bigwood, E. J., 21: 355 Binkley, S. B., 24: 597 Bird, O. D., 25: 397 Birkinshaw, J. H., 22: 371 Blaxter, K. L., 26: 275 Bloch, K., 21: 273 Blomstrand, R., 28: 321 Bodansky, O., 24: 627 Borgström, B., 25: 177 Bourne, E. J., 25: 79 Boyer, P. D., 24: 465; 29: 15 Bressani, R., 27: 403 Briggs, G. M., 24: 339 Brock, J. F., 24: 523 Brodie, B. B., 27: 427 Bromer, W. W., 27: 57 Broquist, H. P., 27: 285 Brown, A. H., 22: 423 Brown, D. M., 24: 311 Brown, G. B., 22: 141 Buchanan, J. M., 28: 365 Bücher, T., 29: 669 Bull, H. B., 21: 179 Burns, J. J., 29: 413

Byers, S. O., 25: 613

# C

Cardini, C. E., 22: 179
Carter, C. E., 25: 123
Chain, A. B., see Beloff-Chain, A.
Chain, E. B., 27: 167
Chance, B., 21: 687
Chantrenne, H., 27: 35
Cheldelin, V. H., 23: 275
Christensen, H. N., 22: 233
Clarke, H. T., 27: 1
Coates, M. E., 28: 439
Cohen, G. N., 29: 525
Cohn, W. E., 26: 491
Connat, H. F., see
Fraenkel-Conrat, H.
Constant, M. A., 23: 319
Coon, M. J., 27: 561

### n

Daft, F. S., 24: 339
Davis, G. K., 23: 459
Debuch, H., 28: 39
de Duve, C., see Duve, C. de
Dekker, C. A., 29: 453
Desnuelle, P., 23: 55
Deuel, H. J., Jr., 21: 109
Dinning, J. S., 29: 437
Diringer, R., 29: 151
Dixon, G. H., 27: 489
Doisy, E. A., 28: 257
Dorfman, R. I., 26: 523
Dounce, A. L., 21: 29
Dubuisson, M., 21: 387
Duggar, B. M., 22: 459
Dunne, M. P. S., see
Stack-Dunne, M. P.
Duve, C. de, 26: 149

### E

Edman, P., 28: 69 Ehrensvärd, G., 24: 275

### .

Fincham, J. R. S., 28: 343

Fischer, H. O. L., 29: 1 Fishman, W. H., 25: 659 Florkin, M., 21: 459 Fraenkel-Conrat, H., 25: 291 Frazer, A. C., 21: 245 Frenkel, A. W., 22: 423 Fried, R., 24: 393 Friedman, M., 25: 613 Fromageot, C., 22: 629 Frush, H. L., 22: 107 Fruton, J. S., 25: 57

### C

Gillette, J. R., 27: 427 Goodwin, T. W., 24: 497 Green, D. E., 24: 1 Greenberg, L. D., 26: 209 Gregory, J. D., 29: 347 Griffin, A. C., 23: 345 Griffith, W. H., 25: 537 Gros, F., 29: 525

### E

Haddow, A., 24: 689 Handler, P., 26: 419 Harris, J. I., 21: 603 Hartley, B. S., 29: 45 Hartman, S. C., 28: 365 Haurowitz, F., 29: 609 Hegsted, D. M., 26: 307 Heidelberger, C., 25: 573 Heidelberger, M., 25: 641 Heppel, L. A., 27: 613 Hers, H. G., 26: 149 Hestrin, S., 22: 85 Hilditch, T. P., 22: 125 Hill, R. L., 28: 97 Hoffmann-Ostenhof, O., 29: 73 Hogan, A. G., 22: 299 Hogeboom, G. H., 25: 201 Holmberg, C. G., 28: 321 Holzer, H., 28: 171 Horecker, B. L., 24: 207 Horwitt, M. K., 28: 411 Huffman, C. F., 22: 399 Hughes, W. L., 23: 177

1

Isbell, H. S., 22: 107 Itano, H. A., 25: 331

J

Jandorf, B. J., 26: 97 Jansen, E. F., 21: 1 Johnson, B. C., 24: 419 Jordan, D. O., 21: 209 Jutisz, M., 22: 629

#### W

Kalckar, H. M., 23: 527 Kamin, H., 26: 419 Katzman, P. A., 28: 257 Kemmerer, A. R., 21: 333 Kendrew, J. C., 26: 327 Kennedy, E. P., 26: 119 Kensler, C. J., 22: 319 Kielley, W. W., 23: 17 Kimmel, J. R., 28: 97 King, E. J., 23: 437 King, T. E., 23: 275 Klenk, E., 28: 39 Klenow, H., 23: 527 Klingenberg, M., 29: 669 Knox, W. E., 28: 223 Kodicek, E., 25: 497 Korkes, S., 25: 685 Kozloff, L. M., 29: 475

L

La Du, B. N., 27: 427 Landowne, R. A., 29: 649 Lang, K. L., see Linderstrøm-Lang, K. Lardy, H., 24: 393 Law, J. H., 29: 517 LeBaron, F. N., 28: 579 Leicester, H. M., 22: 341 Leioir, L. F., 22: 179 Li, C. H., 21: 603 Linderstrøm-Lang, K., 22: 57 Lipsky, S. R., 29: 649 Loosli, J. K., 23: 459 Lowe, H. J., 22: 545 Lushbough, C. H., 27: 313 Lynen, F., 24: 653

### M

McCollum, E. V., 22: 1 McGilvray, D. I., 23: 79 MacIntyre, I., 29: 635 Mackinney, G., 21: 473 Mahler, H. R., 26: 17 Massart, L., 28: 527 Matschiner, J. T., 28: 257 Max Møller, K., 22: 57 Mehler, A. H., 24: 207 Meister, A., 25: 29 Metzler, D. E., 25: 435 Michel, H. O., 26: 97 Michel, R., 23: 481 Mihalyi, E., 26: 373 Miller, E. C., 28: 291 Miller, J. A., 28: 291 Milne, M. D., 23: 437 Mitoma, C., 29: 207 Møller, K. M., see Max Møller, K. Mommaerts, W. F. H. M., 23: 381 Montgomery, R., 21: 79 Moore, S., 21: 521 Morrison, A. B., 27: 339 Mycek, M. J., 25: 57

B

Neilands, J. B., 27: 455 Neurath, H., 27: 489 Nichol, C. A., 21: 633 Nisizawa, K., 28: 15 Novelli, G. D., 26: 243

0

Ochoa, S., 21: 547 Ogston, A. G., 24: 181 Olson, R. E., 28: 467 Ostenhof, O. H., see Hoffmann-Ostenhof, O.

P

Pechère, J.-F., 27: 489
Perlmann, G. E., 29: 151
Perutz, M. F., 26: 327
Petermann, M. L., 22: 319
Peters, R., 26: 1
Pitifiner, J. J., 25: 397
Phillips, P. H., 23: 319
Pigman, W., 28: 15
Platt, B. S., 25: 1
Platt, G. W. E., 25: 463
Pocchiari, F., 29: 295
Popják, G., 27: 533
Porter, J. W. G., 28: 439
Portman, O. W., 26: 307
Putnam, F. W., 26: 307

0

Quaife, M. L., 23: 215

R

Rabinovitz, M., 25: 349 Rabinowitz, J. C., 27: 613 Raistrick, H., 25: 225 Reeves, R. E., 27: 15 Reich, H., 21: 129 Reinhold, J. G., 26: 587 Rimington, C., 26: 561 Robbins, P. W., 29: 347 Roberts, S., 24: 543 Robinson, W. G., 27: 561 Roblin, R. O., Jr., 23: 501 Roche, J., 23: 481 Roseman, S., 28: 545

S

St. George, S., 25: 613 Salomon, L. L., 22: 545 Samuels, L. T., 21: 129 Samets, L. T., 21: 129 Sarett, H. P., 27: 339 Sargent, L. J., 21: 493 Schneider, W. C., 25: 201 Schramm, G., 27: 101 Schultze, M. O., 29: 391 Schweigert, B. S., 27: 313 Schwert, G. W., 24: 83 Schwimmer, S., 26: 63 Schwyzer, R., 29: 183 Scrimshaw, N. S., 27: 403 Shive, W., 27: 643 Shoppee, C. W., 22: 261 Shorland, F. B., 25: 101 Simkin, J. L., 28: 145 Sinex, F. M., 23: 177 Singleton, V. L., 22: 459 Sinsheimer, R. L., 29: 503 Skinner, C. G., 27: 643 Skipper, H. E., 27: 137 Slater, E. C., 22: 17 Slater, R. A., see Alfin-Slater, R. Small, L. F., 21: 493 Smith, E. L(ester), 23: 245 Smith, E(mil) L., 28: 97 Smith, F., 21: 79 Smith, L., 21: 687 Snell, E. E., 25: 435 Sowden, J. C., 26: 645 Stack-Dunne, M. P., 23: 405 Stein, W. H., 21: 521 Steinberg, D., 26: 373 Stekol, J. A., 26: 611: 27: 679; 28: 605 Stephens, R., 25: 79 Stern, J. R., 21: 547 Stickings, C. E., 25: 225 Stumpf, P. K., 29: 261 Swendseid, M. E., 25: 537 Szego, C. M., 24: 543

7

Tarr, H. L. A., 27: 223 Tarver, H., 21: 301 Terroine, E. F., 28: 1 Thomas, K., 23: 1 Thompson, R. H. S., 29: 365 Todd, A. R., 24: 311 Tomcsik, J., 22: 351

# CUMULATIVE INDEX CONTRIBUTING AUTHORS

Totter, J. R., 26: 181 Tsuiki, S., 28: 15

U

Udenfriend, S., 29: 207 Underwood, E. J., 28: 499

Utter, M. F., 27: 245

V

Velick, S. F., 25: 257

Vercauteren, R., 28: 527 Volkin, E., 26: 491

w

Wald, G., 22: 497 Weber, H. H., 26: 667 Webster, G. R., 29: 365 Weinhouse, S., 23: 125 Weissbach, H., 29: 207 Welch, A. D., 21: 633 Whelan, W. J., 29: 105 Whistler, R. L., 23: 79 Wootton, I. D. P., 23: 437; 29: 635 Work, T. S., 21: 431

Y

Young, F. G., 23: 405

Z

Zamecnik, P. C., 21: 411 Zilversmit, D. B., 24: 157

